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COMMERCIAL FEEDING STUFFS IN PENNSYLVANIA, IN 1906.

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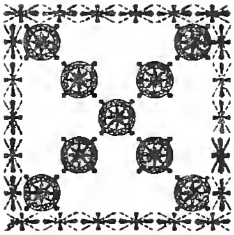

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LETTER OF TRANSMITTAL.

PENNSYLVANIA DEPARTMENT OF AGRICULTURE,

FEEDING STUFFS CONTROL.

Harrisburg, April 1, 1907.

Hon. N. B. Critchfield,
Secretary of Agriculture,
Harrisburg, Pa.

Dear Sir: I have the honor to transmit herewith a manuscript for a bulletin, entitled, "Commercial Feeding Stuffs in Pennsylvania, in 1906." This manuscript contains the results obtained in the examination of feeding stuffs during the year 1906, together with such additional information as circumstances advise.

Very respectfully,
F. D. FULLER,
Chemist.

BULLETIN No. 155.

COMMERCIAL FEEDING STUFFS

IN

PENNSYLVANIA,

IN

1906.

By F. D. FULLER.

SUMMARY.

During the year 1906, sixty-eight cities and towns in thirteen counties of the Commonwealth were visited by Special Agents of the Department of Agriculture, and two hundred and twenty-eight samples of feeding stuffs were collected. These samples were analyzed chemically and many of them were subjected to microscopical examination. Nineteen guaranteed samples were deficient in protein and fat, two were low in fat alone and forty-five fell short in protein only. Nine samples of cottonseed meal were analyzed, four of which were deficient in protein and only five could be called "choice." Marked deficiencies occurred in the samples of distillers' grains, oat feeds and certain dairy feeds containing molasses. Several of the manufacturers of proprietary feeds have materially reduced their guarantees on certain products and there is a better agreement between guarantee and analysis.

Most of the articles offered for sale are properly branded and the disposition of the dealers of the State as well as large milling concerns in the West is to conform to the requirements of the statute.

Substitution of oat hulls for whole oats is still practiced by several parties and the compounding of mixed feed from wheat bran and ground corn cob is carried on by a few firms, but were it not for the feeding stuffs law the adulteration of commercial feeding stuffs would be the rule rather than the exception.

As long as the farmer can raise plenty of corn, hay and oats he cannot afford to purchase any material containing less than fourteen per cent. of protein.

The condition of the feed market at the present time as compared with what it was at the time of the enactment of the law is sufficient testimony of its value to the farmers of the Commonwealth.

INTRODUCTION.

Herewith is presented the work of the Department of Agriculture in the examination of commercial feeding stuffs found in the markets of Pennsylvania during the year ending December 31, 1906.

An Act of the General Assembly was approved by the Governor on April 25, 1901, and not only prohibits the adulteration of food for domestic animals, but requires that the sale of practically all feeds, with but few exceptions, must be accompanied by a printed statement certifying the number of net pounds in the package, the brand name, the name and address of manufacturer or jobber and also a statement of the percentage it contains of crude fat and crude protein.

Whenever any commercial feeding stuff is sold at retail in bulk or in sack belonging to the purchaser, the dealer, upon request of the purchaser, shall furnish to him the certified statement named above.

Attention is called to the fact that the law as amended April 24, 1905, extended the definition of the term "Concentrated Commercial Feeding Stuffs" so as to include the brans and middlings of wheat, rye and buckwheat, although persons engaged within the State of Pennsylvania, in the business of manufacturing flours, may sell, at the place where made, their own make of bran and middlings, without complying with the provisions of section 1, Act No. 78, Laws of 1901.

It is gratifying to note that owing to the rigid enforcement of the law during 1905, and through the publication of the results of the analyses of samples collected in that year, the quality of many of the feeding stuffs on the market in 1906 was greatly improved, correct guarantees were more frequent and materials which heretofore had been sold without guarantees were properly labeled according to the provisions of the law. In view of the fact that an immense quantity of feeding stuffs are consumed in Pennsylvania, we believe that thousands of dollars are annually saved to consumers of these materials, because of the improvement in the feed situation.

Manufacturers and jobbers shipping goods into the State are beginning to realize that in order to hold their trade they must properly brand and guarantee their articles as required by the feeding stuffs law. Dealers and consumers are buying more intelligently and with the co-operation of both honest dealers and farmers the efforts of the Department of Agriculture to purify the feed markets of the State will result in pure and better quality of feeding stuffs.

Incorporated in this Bulletin will be found the analytical data obtained in the examination of samples of feeding stuffs secured in the open markets of Pennsylvania during 1906, together with such additional information as circumstances advise.

SAMPLES OBTAINED BY SPECIAL AGENTS OF THE DEPARTMENT OF AGRICULTURE.

During the year 1906, Special Agents of the Department of Agriculture visited sixty-eight towns and cities in Pennsylvania and collected two hundred and twenty-eight samples of feeding stuffs which were sent under seal to the Chemist.

Owing to the large amount of time consumed by the Special Agents and Chemist in preparation for and in attendance at hearings in various parts of the State as a result of the violations of the law in 1905, it was impossible to collect and analyze as many samples in 1906 as the importance of the work demanded. However, a section of the State was visited from which samples were not taken in 1905, and also some time was occupied by a Special Agent in visiting violators of the law in 1905 to ascertain if the lesson of the previous year had been well learned. As a result of this tour of investigation the Department saw, as never before, the beneficial effect of the vigorous efforts exerted by its officials during the previous year to improve the condition of the markets.

The samples collected have been examined chemically and many of them microscopically and the results and comments on the same are found in the following pages.

TABLE I.—COUNTIES VISITED AND NUMBER OF SAMPLES SECURED FROM EACH.

Name of County.	No. of samples.
Berks,	36
Blair,	23
Bradford,	23
Bucks,	19
Chester,	1
Huntingdon,	1
Lancaster,	2
Lehigh,	14
Lycoming,	20
McKean,	1
Montgomery,	69
Northampton,	5
Susquehanna,	14
Total,	228

The samples analyzed may be classified as follows:

TABLE II.—CLASSIFICATION OF SAMPLES ANALYZED.

Name of Feeding Stuff.	No. of samples.
Cottonseed meal,	9
Linseed meal, N. P.,	4
Linseed meal, O. P.,	4
Flaxseed meal,	1
Distillers' grains,	4
Brewers' grains,	1
Malt sprouts,	5
Gluten feed,	12
Corn bran,	7
Hominy feed,	6
Maizeline,	4
Cerealine feed,	1
Low grade flour,	3
Wheat middlings,	27
Bran and middlings,	5
Wheat bran,	26
Wheat bran with admixture,	1
Oat feeds,	10
Mixed feeds, proprietary and otherwise,	84
Miscellaneous feeds,	10
Animal by-products,	4
Total,	228

GUARANTEES.

The following table shows what materials were deficient in protein or fat, or both of the guaranteed constituents and the number of samples examined in each case.

TABLE III.—SUMMARY OF DEFICIENCIES, 1906.

Name of Feeding Stuff.	No. of samples.	Deficient in protein and fat.	Deficient in protein.	Deficient in fat.
Cottonseed meal,	9	1	4	....
Distillers' grains,	4	1	3	....
Malt sprouts,*	5	....	1	....
Buffalo gluten feed,	5	....	1	....
Corn bran,†	7	....	3	....
Wheat middlings,‡	27	1	3	....
Bran and middlings,§	5	1	....	....
Wheat bran,||	26	....	2	....
Vim oat feed,	2	1	1	....
Friends' oat feed,	3	2	1	....
Royal oat feed,	4	2	2	....
Quaker dairy feed,	1	1	....	....
Sucrene dairy feed,	7	....	6	....
Dairy feed, B. H. D. Co's.,	1	....	1	....
Creamo dairy feed,	2	1	1	....
Protena dairy feed,	1	....	1	....
Hammond dairy feed,	5	....	4	....
Green diamond sugar feed,	5	3	1	1
Mueller's molasses grains,	1	1	....	....
Sucrene horse feed,	4	1	2	....
Horse feed, B. H. D. Co's.,	1	....	1	....
Corno horse feed,	1	1	....	....
Husted's horse feed,	1	....	1	....
American poultry food,	1	....	1	....
Schumacher's stock feed,	6	....	3	....
Corn, oats and barley feed, B. H. D. Co's.,	1	....	....	1
Animal by-products,	4	2	2	....
Totals,	139	19	45	2

*Two samples guaranteed.
†Three samples guaranteed.
‡Seventeen samples guaranteed.
§Three samples guaranteed.
||Sixteen samples guaranteed.

Nineteen samples out of 139 collected were deficient in protein and fat, 45 in protein alone and 2 in fat alone; or in other words, 64 samples, or 46 per cent., contained less protein than guaranteed by the manufacturers, and 21 samples, or 15 per cent., were deficient in fat. Of the 9 samples of cottonseed meal examined four were deficient in protein and only 5 could be called "choice," which should carry not less than 41.2 per cent. of protein. Marked deficiencies occurred in the samples of distillers' grains, oat feeds and certain dairy feeds containing molasses. It is with pleasure that we note that several of the largest manufactures of proprietary feeds have materially reduced their guarantees on certain products and we may expect in the future an improvement in the agreement between guarantees and actual analysis. Most of the feeding stuffs are properly guaranteed and the disposition of dealers in this State as well as large manufacturers in the West is to conform to the requirements of the statute. A letter is just at hand from a large milling concern in the West, a portion of which reads as follows:

"We adopted the plan (referring to proper branding of goods) a long while ago, finding it much to our advantage, as we believe it has materially assisted us in selling our feed. It shows an honesty of purpose and a desire on the part of the mill to give the buyer exactly what he expects and what he is paying for."

The attention of manufacturers is again respectfully called to the fact that *it is improper to guarantee the amount of protein and fat together.* The guarantees shall state the amount of crude protein *and* crude fat.

Many inquiries are received as to the proper form of guarantee to be used and in order to make clear the requirements of section 1 of the act, the following form is suggested, which should be plainly printed on the package or on a tag attached to the package.

100 LBS.
COTTONSEED MEAL

Manufactured by
JOHN JONES & COMPANY
Memphis, Tenn.

Guaranteed Analysis:

Crude Protein, ... 41%
Crude Fat, ... 9%

PURITY OF FEEDING STUFFS.

No direct evidence of adulteration was found in the samples of feeds analyzed during 1906. Many feeds, however, were of an inferior quality. This inferiority is due largely to the processes of manufacture.

Substitution of oat hulls for whole oats is still practiced by several manufacturers and the compounding of mixed feed from wheat bran and corn cob meal is carried on by a few firms, but were it not for the feeding stuffs law the adulteration of commercial feeding stuffs would be the rule rather than the exception.

CLASSIFICATION OF FEEDING STUFFS.

Feeding stuffs can be conveniently arranged into classes according to their protein content.

The percentage of protein in feeding stuffs gradually decreases from cottonseed meal to oat feeds which are not much better than oat hulls.

The arrangement here presented is practically the one suggested by Jordan and Jenter* with a few of the more recent feeds added.

TABLE IV.—FEEDING STUFFS ARRANGED IN CLASSES.

CLASS I—30 per cent. to 45 per cent. protein,	Cottonseed meal, linseed meal, Cream, Chicago and King gluten meals, Ajax Flakes, Biles' XXXX and Merchants' distillers' grains.
CLASS II—20 per cent. to 30 per cent. protein,	Gluten feeds, malt sprouts, dried brewers' grains, buckwheat middlings, peas and beans.
CLASS III—14 per cent. to 20 per cent. protein,	Reg dog flour, bran and middlings from wheat and rye, H-O, Sucrene, Hammond and Protena dairy feeds and Molasses grains.
CLASS IV— 8 per cent. to 14 per cent. protein,	Quaker dairy feed, barley, corn, oats, rye, wheat, cerealine, hominy, corn and oats chop, corn bran, H-O and Sucrene horse feeds, American poultry food and dried beet pulp.
CLASS V— 5 per cent. to 8 per cent. protein,	Low-grade oat feeds.

The hays and other coarse fodders can be classed in the fourth group.

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*Bul. 166, New York (Geneva) Experiment Station.

COMPARISON OF THE COST OF VARIOUS FEEDING STUFFS.

The following table shows the actual amount of protein and fat which the consumer obtained for $1.00.

TABLE V.—POUNDS OF PROTEIN AND FAT OBTAINED IN FEEDING STUFFS FOR ONE DOLLAR, AT CURRENT RETAIL PRICES.

Name of Feeding Stuff.	Protein.	Fat.
Class 1 (30 per cent.-45 per cent. Protein).		
Cottonseed meal,	26.73	5.87
Linseed meal, N. P.,	23.50	2.33
Linseed meal, O. P.,	18.12	3.90
Ajax flakes,	21.47	7.95
Continental gluten feed,	23.84	11.20
Manhatten gluten feed,	24.28	11.48
Class 2 (20 per cent.-30 per cent. Protein).		
Dried brewers' grains,	19.35	6.02
Malt sprouts,	26.01	2.16
Buffalo gluten feed,	18.77	2.89
Tiger gluten feed,	20.17	3.16
Warner's gluten feed,	19.04	2.60
Class 3 (14 per cent.-20 per cent. Protein).		
Red dog flour,	12.35	2.69
Wheat middlings,	13.77	3.99
Wheat bran,	13.24	4.27
Sucrene dairy feed,	12.99	3.25
B. H. D. Co's dairy feed,	11.45	3.29
H-O Co's dairy feed,	12.81	3.43
Prize dairy feed,	14.46	2.40
Protena dairy feed,	12.60	3.21
Hammond dairy feed,	13.23	4.31
Mueller's molasses grains,	13.65	1.44
B. H. D. Co's poultry food,	16.46	4.29
H-O Co's poultry food,	9.33	2.89
Rye middlings,	13.72	3.15
Buckeye wheat feed,	12.96	4.38
Class 4 (8 per cent.-14 per cent. Protein.)		
Corn bran,	10.05	5.81
Hominy feed,	9.54	7.93
Maizeline,	7.05	5.77
Cerealine feed,	8.59	9.92
Quaker dairy feed,	13.13	2.65
Creamo dairy feed,	10.78	3.20
Green diamond sugar feed,	10.53	2.18
Sucrene horse feed,	10.42	2.70
Jersey mixed feed,	10.14	3.00
Corno horse feed.	6.52	2.50
H-O Co's horse feed,	9.75	3.67
Husted's horse feed,	8.10	3.14
Chop feeds,	7.87	2.83
Quaker dairy corn and oat feed,	12.56	3.87
Victor corn and oat feed,	6.81	3.72
Schumacher's stock feed,	8.39	3.44
Crushed oats,	7.00	2.78
Dried beet pulp,	11.48	0.80
American poultry food,	8.22	4.18
Class 5 (5 per cent-8 per cent. Protein).		
Vim oat feed,	8.70	3.58
Friends' oat feed,	9.43	3.73
Royal oat feed,	9.36	3.53

The average amounts of protein and fat, respectively, which may be obtained for $1 in the five different classes, are as follows:

Class 1, 22.99 and 7.12 pounds.
Class 2, 20.67 and 3.37 pounds.
Class 3, 13.07 and 3.34 pounds.
Class 4, 9.31 and 3.89 pounds.
Class 5, 9.16 and 3.61 pounds.

It is noticeable that the amount of protein obtainable for $1 constantly decreases from Class 1 to Class 5, while on the other hand, the amount of fat secured for the same sum is quite uniform, with the exception of Class 1. It appears, therefore, that in the purchase of commercial feeding stuffs, their fat content is of less importance than their protein content. Protein is the necessary ingredient for practically all farmers and dairymen to purchase, and it is simply a matter of good business policy to be able to go into the market and select the most digestible protein for the least expenditure of money. All the feeds included in the first three classes may be considered protein feeds, while those in the last two classes are chiefly carbohydrate feeds. As the farmer needs to purchase protein to supplement the home-grown feeds, it is certainly unwise for him to buy any article included in the last two classes. Occasionally one may find it to his advantage to purchase some carbohydrate feed included in Class 4, but under no circumstances can the writer recommend the purchase of such material as is found in Class 5, at the prevailing prices. The figures found in the preceding table are based on the average retail prices of the feeds during 1906. The price of the same article varies according to locality, and, of course, is a great factor in the selection of proper materials.

AVERAGE PARTIAL COMPOSITION AND RETAIL PRICE.

The following table shows the average partial composition and retail price of the several feeding stuffs examined in 1906. They are arranged in classes according to their protein content.

TABLE VI. AVERAGE ANALYSIS AND RETAIL PRICE.

Name of Feeding Stuff.	Protein.	Fat.	Fiber.	Price per ton.
Class 1 (30 per cent.-45 per cent. Protein).	Per ct.	Per ct.	Per ct.	
Cottonseed meal,	41.21	9.09	....	$30 83
Linseed meal, N. P.,	35.86	3.06	....	30 52
Linseed meal, O. P.,	33.75	7.26	....	37 25
Manhatten gluten feed,	31.56	14.93	....	26 00
Continental gluten feed,	31.00	14.57	9.08	26 00
Ajax flakes,	30.59	11.33	....	28 50
Class 2 (20 per cent.-30 per cent. Protein.)				
Malt sprouts,	25.49	2.12	....	19 60
Tiger gluten feed,	25.41	3.99	....	25.20
Warner's gluten feed,	24.75	3.38	....	26 00
Buffalo gluten feed,	24.40	3.76	....	26 00
Dried brewers' grains,	22.25	6.93	16.34	23 00
Class 3 (14 per cent.-20 per cent. Protein).				
Poultry feed, B. H. D. Co's,	19.75	5.15	7.34	24 00
Dairy feed, H-O Co's,	17.94	4.80	12.59	28 00
Poutry feed, H-O Co's,	17.50	5.42	6.05	37 50
Wheat middlings,	16.64	4.83	5.72	24 17
Prize dairy feed,	16.63	2.76	....	23 00
Protena dairy feed,	16.38	4.18	21.47	26 00
Buckeye wheat feed,	16.20	5.48	....	25 00
Red dog flour,	15.75	3.43	....	25 50
Sucrene dairy feed,	15.27	3.82	9.29	23 50
Hammond dairy feed,	15.21	4.96	10.22	23 00
Dairy feed, B. H. D. Co's,	14.88	4.28	10.87	26 00
Wheat bran,	14.85	4.79	9.84	22 44
Rye middlings,	14.75	3.39	4.59	21 50
Mueller's molasses grains,	14.33	1.52	8.42	21 00
Class 4 (8 per cent.-14 per cent. Protein).				
Creamo dairy feed,	13.79	4.09	18.99	25 58
Green diamond sugar feed,	13.37	2.77	11.36	25 40
H-O Co's horse feed,	13.17	4.96	10.71	27 00
Quaker dairy feed,	13.13	2.65	18.14	20 00
American poultry food,	12.88	6.55	5.45	31 30
Quaker dairy corn and oat feed,	12.77	3.94	16.59	20 33
Jersey mixed feed,	12.69	3.75	12.27	25 00
Chick manna,	12.50	4.59	2.17	....
Sucrene horse feed,	12.14	3.18	....	23 50
Crushed oats,	11.56	4.60	10.84	33 00
Dried beet pulp,	11.34	0.79	13.29	19 75
Hominy feed,	10.73	8.92	4.05	22 50
Corn bran,	10.73	6.21	10.13	21 35
Schumacher's stock feed,	10.70	4.39	10.74	25 50
Husted's horse feed,	10.13	3.93	12.14	25 00
Chop feeds,	10.11	3.64	5.70	25 70
Cerealine feed,	9.88	11.41	9.92	23 00
Maizeline,	8.81	7.21	9.68	25 00
Corno horse feed,	8.81	3.38	15.81	27 00
Victor corn and oat feed,	8.00	4.37	12.46	23 50
Class 5 (5 per cent.-8 per cent. Protein).				
Friends' oat feed,	6.21	2.46	23.85	13.17
Royal oat feed,	5.97	2.25	25.46	12 75
Vim oat feed,	5.44	2.24	25.94	12 50
Animal By-Products.				
Crissel,	52.38	18.66	....	70 00
Ground meat, Spratt's,	51.35	16.36	....	60 00
Meat meal, Baugh's,	50.58	14.60	....	50 00
Chicken feed,	36.63	12.62	....	60 00

THE SELECTION OF FEEDING STUFFS.

A glance at the preceding table will reveal the fact that the retail price of a feed is no indication of its value as a supply of nutrients. Certain feeds containing 31, 25, 16, 13 and 10 per cent. of protein, respectively, sell for the uniform price of about $26 per ton. The amount of protein in the five classes of feeds varies from 41.21 per cent. to 5.44 per cent., and may be arranged as follows:

Class 1. Cottonseed meal, linseed meal and corn distillers' grains carrying from 30.59 to 41.21 per cent. of protein and costing from $26 to $37.25.

Class 2. Malt sprouts, dried brewers' grains and gluten feed, carrying from 22.25 to 25.49 per cent. of protein and costing from $19.60 to $26.

Class 3. Wheat by-products, rye middlings, dairy and poultry feed mixtures and molasses grains, carrying from 14.33 to 19.75 per cent. of protein and costing from $21 to $37.50.

Class 4. Corn bran, hominy feed, maizeline, cerealine feed, corn and oat feed, dried beet pulp, chop feed and horse feed mixtures, carrying from 8 to 13.79 per cent. of protein and costing from $19.75 to $33.

Class 5. Low grade oat feeds, carrying from 5.44 to 6.21 per cent. of protein and costing from $12.50 to $13.17.

COMPOSITION OF FEEDING STUFFS.

Knowing the amounts of protein, fat and crude fiber in a feed, one can form some opinion as to its feeding value although its digestibility must be taken into consideration. An index of the nature of the feed is usually found in the percentages of nutrients present.

The following table presents figures showing the average percentages of protein, fat and crude fiber in the principal feeding stuffs found on the market. The partial composition of various mixtures is also given.

Most of the figures have been taken from Bul. 81, of this Department, which were in turn taken from Farmers' Bul. 22, Department of Agriculture, Washington, D. C.

Since the publication of the above bulletins, the composition of certain feeds has changed somewhat, therefore the following figures more nearly represent their analyses at the present time. The figures showing the partial composition of the various mixtures given in the latter part of the table were obtained by calculation. The percentages given are averages, from which there are variations.

TABLE VII.—AVERAGE PARTIAL COMPOSITION OF FEEDING STUFFS.

Name of Feed.	Protein.	Fat.	Fiber.
	Per ct.	Per ct.	Per ct.
Cottonseed meal,	42.3	9.0	5.6
Linseed meal, N. P.,	38.2	3.0	9.5
Linseed meal, O. P.,	32.9	7.9	8.9
Ground linseed,	21.6	30.4	7.3
Distillers' dried grains,	32.0	13.0	11.8
Brewers' dried grains,	25.0	5.6	11.6
Malt sprouts,	23.2	1.7	10.7
Gluten meal,	29.7	3.0	2.2
Gluten feed,	24.0	3.5	5.3
Buckwheat middlings,	28.9	7.1	4.1
Wheat middlings,	17.4	5.6	5.2
Wheat bran,	15.4	4.0	9.0
Oats,	11.8	5.0	9.5
Wheat,	11.9	2.1	1.8
Barley,	12.4	1.8	2.7
Corn,	10.5	5.4	2.1
Rye,	10.6	1.7	1.7
Buckwheat,	10.0	2.2	8.7
Corn meal,	9.2	3.8	1.9
Oat meal,	14.7	7.1	0.9
Barley meal,	10.5	2.2	6.5
Hominy chop,	9.8	8.3	3.8
Corn and cob meal,	8.5	3.5	6.6
Corn cob,	2.4	0.5	30.1
Oat hulls,	3.4	1.3	37.2
Rice hulls,	3.6	0.7	35.7
Corn and oats, equal parts,	11.1	5.2	5.8
Corn, 75 per cent.; oats, 25 per cent.,	10.8	5.3	3.9
Corn, 25 per cent.; oats, 75 per cent.,	12.4	5.1	7.6
Oats and oat hulls, equal parts,	7.6	3.1	23.5
Oats, 75 per cent.; oat hulls, 25 per cent.,	10.7	4.0	16.5
Oats, 25 per cent.; oat hulls, 75 per cent.,	5.5	2.2	30.5
Corn, oats and barley, equal parts,	11.5	4.0	4.7
Corn, oats and rye, equal parts,	10.9	**4.0**	**4.4**
Oats and rye, equal parts,	11.2	3.3	5.6

In Table X are given the percentages of moisture, protein, fat and fiber found in each feed as determined by chemical analysis. In order to make it easier to understand the results, the following brief explanations are given:

Moisture, or water, is present in all feeding stuffs. The material may seem to be dry, but nevertheless it contains an appreciable amount of water which is determined by heating a known quantity of the food at the temperature of boiling water for several hours, and noting the loss in weight. Feeding stuffs should be compared on a moisture-free basis.

Protein is a term which includes all the nitrogenous compounds of a feed, regardless of their nature. They all contain nitrogen and this seems to be the only common characteristic. Protein is determined indirectly. Sixteen per cent. of the protein present is made up of nitrogen, so that by making a direct estimation of nitrogen and multiplying the result by the factor 6.25, we obtain the percentage of protein.

In every day life we deal with materials which resemble protein substances, namely, white of egg, curd of milk, lean meat, gelatin, etc., and the animal uses the protein of the food to make these important substances, to restore the waste of tissues and muscles, which occurs at all times, and also uses it to form flesh. Protein then is the most necessary ingredient for the farmer to purchase, and as it is the most important nutrient in commercial feeds, so is it the most expensive. These facts explain why the percentage of protein in feeding stuffs should be guaranteed.

Fat, or the ether extract, properly speaking, is made up of the substances which are extracted from the dry feeding stuff by absolute ether. It consists, chiefly,.of the fats and oils, but the gums, waxes and coloring matters are also removed. Fat is guaranteed because a pound is worth 2.25 times as much as a pound of starch in producing heat and energy, because an excess of fat in the feed tends to retard digestion, and certain feeds containing over ten per cent. may become sour and unpalatable.

Fiber is usually the most indigestible portion of a feed. It is largely made up of cellulose, and cotton fiber is a familiar example. When the fiber *is* digested its value is probably equal to that of starch or sugar.

OF WHAT VALUE ARE THE ANALYSES OF FEEDING STUFFS?

A table showing the analyses of feeding stuffs is useful in several ways.

First, it immediately shows if any particular brand of feed or particular sample of that brand is of inferior or superior quality, as compared with others of the same class. *Secondly,* it shows whether or not the feed is up to the guarantees of protein and fat. *Thirdly,* if the material is adulterated, or not, it often shows it, and many times if it is adulterated, the table of analyses indicates the nature of the adulteration. *Fourthly,* it supplies data for the compounding of rations for farm animals, and in order to do this skilfully, one must make a study of the subject of feeding animals, the exposition of which can not be undertaken within the limited space furnished in a bulletin.

COEFFICIENTS OF DIGESTIBILITY.

Feeding stuffs are not entirely digested. A portion of each passes through the body without being absorbed and used by the animal. It is obvious, therefore, that of two feeds having nearly the same composition, the one which is most digestible has a greater nutritive value.

A certain amount of the protein, fat, fiber, etc., of each feed is digested by animals and the term "coefficients of digestibility" represents the percentages of nutrients retained in the process of digestion. These percentages vary with different feeds.

In Table VI will be found digestion coefficients of many of the feeds used at the present time.

For instance, the average digestion coefficient of protein in "Victor corn and oat feed" is 71, and in cottonseed meal, it is 88. That is, out of every 100 pounds of protein furnished by "Victor corn and oat feed," 71 pounds are digestible by neat cattle, while out of the same amount of protein supplied by cottonseed meal, 88 pounds are utilized by the animal, provided, of course, that these feeds are of average quality and the animal is in good health.

To make an actual use of this table we will take the analysis of a sample of cottonseed meal (Chemist's No. 531), found on page 37, which is as follows: Protein, 41 per cent. and fat, 9.43 per cent. In other words, each 100 pounds of this brand of feed contained 41 pounds of protein and 9.43 pounds of fat. By referring to the following table we see that 88 per cent. of the protein and 93 per cent. of the fat is digestible. By simple proportion 100:88::41:x, we find that 36.08 pounds of protein out of 41 pounds present, are digestible. In a similar manner we can determine the amount of fat which is digestible.

Although it is not claimed that the figures in the following table are absolutely correct, yet they are useful in ascertaining with approximate accuracy the amounts of available nutrients furnished by different feeding stuffs.

TABLE VIII.—DIGESTION COEFFICIENTS* OBTAINED IN EXPERIMENTS WITH RUMINANTS.

Name of Feed.	Protein.	Fat.	Fiber.
Cottonseed meal,	88	93	56
Linseed meal, N. P.,	85	97	80
Linseed meal, O. P.,	89	89	57
Gluten meal,	88	94	....
Gluten feed,	86	84	78
Rye meal,	84	64	....
Wheat middlings,	80	86	33
Wheat bran,	78	68	29
Brewers' dried grains,	79	91	53
Malt sprouts,	80	100	33
H-O dairy feed,	78	86	41
H-O horse feed,	74	84	35
Victor corn and oat feed,	71	87	48
Corn meal,	68	92	....
Corn and cob meal,	56	84	46
Oats,†	78	83	26
Barley,†	70	89	66

*Bul. 77, U. S. Dep't of Agr.
†Jordan, The Feeding of Animals.

There has been issued from the Pennsylvania Agricultural Experiment Station, a bulletin* devoted to explaining the relative value of the various materials used as feeding stuffs for domestic animals, and from which the following is extracted:

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*No. 81.

The following table gives the amount of digestible protein and total digestible matter in some of the more common grains and commercial feeding stuffs. It also shows the cost per pound of total digestible matter at the prices per ton given, which seem to be about the prevailing ones for feeds in bulk in central Pennsylvania at the present time, November 1, 1906.

	Digestible protein per cent.	Total digestible matter per cent.	Price per ton.	Cost per pound digestible matter, cents.
Corn meal,	5.5	76.6	a$24 00	1 57
Corn and cob-meal,	4.4	70.9	b21 00	1 48
Wheat bran,	12.0	57.4	21 00	1 83
Wheat middlings,	12.8	73.7	22 00	1 49
Oats,	9.2	62.4	c21 87	1 75
Rye chop,	6.4	76.7	d28 00	1 82
Buckwheat middlings,	23.7	74.2	22 00	1 48
Buckwheat bran,	7.4	42.0	16 00	1 90
Cottonseed meal,	37.2	80.9	30 00	1 85
Cottonseed meal, 36 per cent.,	31.7	73.5	28 00	1 90
Linseed meal, O. P.,	29.3	77.8	32 00	2 06
Hominy chop,	7.5	77.7	23 00	1 48
Gluten feed,	19.4	82.7	26 00	1 57
Red dog flour,	13.5	79.2	27 00	1 70
Malt sprouts,	18.6	58.9	18 00	1 53
Dried brewers' grains,	16.8	63.9	22 00	1 72
Dried distillers' grains, corn,	22.0	86.3	26 50	1 54
Alfalfa meal,	10.4	53.4	24 00	2 25

a, 56 cents per bushel, one-sixth for toll, or 59 cents, one-eighth toll. b, 61 cents per bushel, one-sixth toll, or 64 cents, one-eighth toll. c, 35 cents per bushel. d, 65 cents per bushel, one-sixth toll, or 69 cents, one-eighth toll.

By reference to the last column of this table it will be seen that corn and cob-meal, buckwheat middlings, wheat middlings and hominy chop are the cheapest feeds, followed closely by malt sprouts, dried distillers' grains, corn meal and gluten feed. The relative prices may vary somewhat in different localities, but in general it is probably safe to say that these will be the cheapest feeds this season. The most expensive feed in the above table is alfalfa meal, the next most expensive linseed meal. While linseed meal has some value aside from its digestible nutrients, it is doubtful whether alfalfa meal has any such. It is almost certain that the price, $24 per ton, is not warranted. Where ear corn is available it can be economically ground into corn and cob meal and gluten feed or dried distillers' grains added to furnish the desired amount of protein. Some wheat bran, or linseed meal might be used in small quantities for the sake of palatability, or a little cottonseed meal to harden the butter fat. It is altogether probable that not all these different feeds will be found on the market in any one locality, particularly in the country districts. The feeder will, however, usually be able to obtain enough variety to make an economical selection.

The following are the equivalent prices of various grains and feed stuffs based upon total digestible matter, with corn meal at $24 per ton:

	Price per ton.
Corn meal,	$24 00
Corn and cob-meal,	22 20
Wheat bran,	18 00
Wheat middlings,	23 15
Oats,	19 60
Rye chop,	24 10
Buckwheat middlings,	23 30
Buckwheat bran,	13 20
Cottonseed meal,	25 40
Cottonseed meal, 36 per cent.,	23 10
Linseed meal, O. P.,	24 45
Hominy chop,	24 40
Gluten feed,	25 95
Red dog flour,	24 85
Malt sprouts,	18 50
Dried brewers' grains,	20 05
Dried distillers' grains, corn,	27 10
Alfalfa meal,	16 75

This last table is given to show approximately the prices which feeders would be warranted in paying for these different grains considered simply as sources of digestible matter when corn meal can be had at $24 per ton. From this is seen that many of these feeds have a price altogether out of proportion to their digestible constituents. On this basis it appears that alfalfa meal is worth only about two-thirds the present market price and linseed meal about three-quarters of the market price. Corn and cob-meal, wheat middlings, buckwheat middlings, hominy chop, dried distillers' grains and malt sprouts are cheaper than corn meal. As has already been stated, the digestible matter alone cannot be taken absolutely as the basis. Palatability and general physiological effect must be considered, while for many purposes the percentage of protein in the material will be the controlling factor in its selection.

WEIGHT OF FEEDING STUFFS.

This table was prepared by weighing a carefully measured quantity of the several feeds.

TABLE IX.—AVERAGE WEIGHT* OF ONE QUART OF FEEDS NAMED.

Cottonseed meal,	1.5 lbs.
Linseed meal, N. P.,	0.9 lbs.
Linseed meal, O. P.,	1.1 lbs.

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*Bul. 106, Mass. (Hatch) Agr'l Exp't Station.

Gluten meal,	1.7 lbs.
Gluten feed,	1.3 lbs.
Germ oil meal,	1.4 lbs.
Distillers' dried grains,	0.5-0.7 lbs.
Malt sprouts,	0.6 lbs.
Brewers' dried grains,	0.6 lbs.
Wheat middlings (flour),	1.2 lbs.
Wheat middlings (standard),	0.8 lbs.
Mixed feed, wheat,	0.6 lbs.
Wheat bran,	0.5 lbs.
H-O dairy feed,	0.7 lbs.
Oat middlings,	1.5 lbs.
Rye feed,	1.3 lbs.
Oats, whole,	1.0 lbs.
Wheat, whole,	1.9 lbs.
Barley, whole,	1.5 lbs.
Rye, whole,	1.7 lbs.
Corn, whole,	1.7 lbs.
Oats, ground,	0.7 lbs.
Wheat, ground,	1.7 lbs.
Barley meal,	1.1 lbs.
Rye meal,	1.5 lbs.
Corn meal,	1.5 lbs.
Corn and cob-meal,	1.4 lbs.
Corn bran,	0.5 lbs.
Hominy meal,	1.1 lbs.
Corn and oat feed, Victor,	0.7 lbs.
Quaker dairy feed,	1.0 lbs.
Oat feed,	0.8 lbs.

ACKNOWLEDGMENTS.

The writer takes great pleasure at this time in acknowledging the many valuable courtesies received from the Honorable Secretary of Agriculture. To him especial thanks are due for his continued loyal support in all the work pertaining to Feeding Stuffs Control. It is my desire, also, to express my appreciation for the helpful co-operation and assistance rendered by the Special Agents of the Department of Agriculture, Mr. G. G. Hutchison, Warriorsmark, and Mr. M. P. Anderson, Phoenixville.

The people of Pennsylvania, through the medium of the press, have learned a great deal concerning the quality of feeding stuffs on the market and the work of the Department in the enforcement of the law. To the Pennsylvania press and the various organs of the trade as well as all manufacturers of and dealers in commercial feeding stuffs who have materially assisted us in our work, grateful acknowledgments are due, and our hearty thanks are hereby extended.

DISCUSSION OF THE ANALYTICAL RESULTS.

OIL CAKE MEALS.

Cottonseed Meal.

Analyses on page 37.

Cottonseed meal is obtained by grinding the solid cakes after approximately four-fifths of the oil has been removed from the cottonseed, which has previously been treated to remove the hulls and lint.

The Interstate Cottonseed Crushers' Association, at a meeting held in May, 1906, graded cottonseed meal as follows:

Choice cottonseed meal must be finely ground, perfectly sound and sweet in odor, yellow, free from excess of lint and hulls, and by analysis must contain 8 per cent. ammonia (41.15 per cent. protein).

Extra prime cottonseed meal must be finely ground, of sweet odor, reasonably bright in color, yellow, not brown or reddish, and by analysis must contain 7 1-2 per cent. ammonia (38.50 per cent. protein).

Prime cottonseed meal must be finely ground, of sweet odor, reasonably bright in color, and by analysis must contain at least 7 per cent. ammonia (36 per cent. protein).

The above information in regard to the classification of cottonseed meal was furnished, upon request, by Messrs. C. W. Wagar & Co., of Philadelphia, to whom due credit is hereby given.

Nine samples of cottonseed meal were examined in 1906 and only five could be called "choice" meal. Four samples of The American Cotton Oil Co.'s product guaranteed to contain 41 per cent. of protein and 9 per cent. of fat, carried from 39.56 to 42.88 per cent. of protein and from 8.78 to 9.43 per cent. of fat. One sample of the Battle Co.'s brand, guaranteed to contain 43 per cent. protein, carried only 40.56 per cent.

Cottonseed meal and like materials are bought at wholesale on a guaranteed basis, and consumers, as well as jobbers, have a perfect right to demand a pro rata rebate if the goods they purchase are not as represented.

AVERAGE ANALYSES AND RETAIL PRICES.

	1905.	1906.
Number samples,	1	9
Protein,	40.63	41.21
Fat,	7.09	9.09
Price per ton,	$28 00	$30 83

Linseed Meal.

Analyses on page 37.

Linseed meal is also known on the market as "Oil Meal" and "Flaxseed Meal," and these names are applied to the product obtained by extracting more or less of the oil from ground flaxseed. There are two methods in use for extracting the oil. By the "old process" method, hydraulic pressure is used, which removes less of the fat than does the "new process" method, which employs naptha as a solvent. New process meal, therefore, contains more protein than old process meal. Four samples of new process meal were examined and carried an average of 35.86 per cent. of protein and 3.06 per cent. of fat. The four samples of old process meal carried an average of 33.75 per cent. of protein and 7.26 per cent. of fat.

AVERAGE ANALYSES AND RETAIL PRICES.

	New Process.		Old Process.	
	1905.	1906.	1905.	1906.
Number samples,	2	4	10	4
Protein,	36.27	35.86	32.33	33.75
Fat,	2.76	3.06	7.12	7.26
Price per ton,	$30.50	$30.52	$38.10	$37.25

The new process meals showed a little less protein and more fat than found in the meals analyzed in 1905, but the price was about the same. The old process meals contained more protein and fat than found in 1905, and the price was nearly one dollar per ton less.

OIL SEED MEAL.

Flaxseed Meal.

Analysis on page 37.

One sample of this material was analyzed and found of average composition. Flaxseed meal differs from the samples of linseed meal in that the fat has not been removed, and, therefore, the percentage of protein is smaller.

DISTILLERY AND BREWERY BY-PRODUCTS.

Distillers' Grains.

Analyses on page 37.

Distillers' grains are obtained from the cereals, usually corn and rye, in the manufacture of alcohol, whiskey and spirits.

Briefly, the process is as follows:

The grains are treated with a malt solution which converts the starch into sugar. Yeast is then added, thus changing the sugar into alcohol, which can be distilled. The residue left after removing the alcohol, consisting chiefly of the protein, germs and hulls of the grains used, is dried and sold as food for cattle. Distillers' grains, having all the starch removed is consequently richer in protein and fat than the grains from which they are derived. These grains are considered a valuable and economical food for dairy animals.

The four samples analyzed fell short of their protein guarantees and one contained less fat than guaranteed. The sample of *Continental Gluten Feed* guaranteed to contain 35 per cent. of protein carried 31 per cent. Since the sample was taken the manufacturers informed the writer that the article is guaranteed to contain 35 per cent. of protein and 12.50 per cent. of fat on a dry basis. This form of a guarantee is deceptive and misleading, and the consumer has a right to know the amount of nutrients present in the material in its ordinary condition.

AVERAGE ANALYSES AND RETAIL PRICES.

	1905.	1906.
Number samples,	4	4
Protein,	31.19	30.94
Fat,	13.08	13.04
Price per ton,	$26 66	$27 25

Brewers' Grains.

Analysis on page 37.

Brewers' grains are obtained from barley in the manufacture of beer. The barley is first placed under conditions favorable to germination, and during this process the starch is converted into sugar. The sprouts are removed and sold as cattle food, while the malted grains are crushed, the sugar is extracted and the residue is dried and placed upon the market as dried brewers' grains.

Distillers' and brewers' grains are fairly digestible and the sample analyzed was of fair quality.

ANALYSES AND RETAIL PRICES.

	1905.	1906.
Number samples,	1	1
Protein,	28.50	22.50
Fat,	7.27	6.93
Price per ton,	$20 00	$23 00

Malt Sprouts.

Analyses on page 37.

As stated above the sprouts formed in the germination of barley are removed and sold as cattle food. They contain little fat, but are valuable as a source of protein.

AVERAGE ANALYSES AND RETAIL PRICES.

	1905.	1906.
Number samples,	1	5
Protein,	25.13	25.49
Fat,	1.53	2.12
Price per ton,	$20 00	$19 60

The quality of the sprouts sold was better than in 1905 and at a little lower price.

MAIZE BY-PRODUCTS.

Gluten Feed.

Analyses on pages 37 and 39.

Gluten feed and corn bran are by-products from maize in the manufacture of starch and sugar.

Maize kernels are first soaked in a weak sulphurous acid solution, then crushed, and treated with water. The hulls being the lightest portion, rise to the surface, the germs sink and the starch remains in suspension. The starch finally settles to the bottom, is separated from the germs, while the hulls are floated off, dried and sold as "corn bran."

The meal which contains the hard portion of the kernel is richest in protein, the gluten feed which contains more or less of the hulls contains about 10 per cent. less protein than the meal, while corn bran is lowest in protein and highest in crude fiber.

One often finds on the market material sold as "gluten feed," which is really distillers' grains. The name of a feed is not always a true indication of its nature.

Twelve samples of gluten feed were analyzed which showed an average of 25.04 per cent. of protein and 3.86 per cent. of fat.

AVERAGE ANALYSES AND RETAIL PRICES.

	1905.	1906.
Number samples,	7	12
Protein,	23.76	25.04
Fat,	3.52	3.86
Price per ton,	$25 50	$25 61

The quality was somewhat better than in 1905, and the price about the same.

Corn Bran.

Analyses on page 39.

Seven samples of corn bran were analyzed, three of which were guaranteed.

AVERAGE ANALYSES AND RETAIL PRICES.

	1905.	1906.
Number samples,	1	7
Protein,	12.06	10.73
Fat,	3.27	6.21
Price per ton,	$20 00	$21 35

Hominy Feed.

Analyses on page 39.

This material is a by-product from the manufacture of hominy and starch. It consists of the hull and germ of the maize kernel, is quite rich in fat and contains but little more protein and fiber than does corn meal. Six samples of this material were analyzed, all but one of which were guaranteed. Hominy feed has practically the same value as average corn meal for feeding purposes.

AVERAGE ANALYSES AND RETAIL PRICES.

	1905.	1906.
Number samples,	1	6
Protein,	10.44	10.73
Fat,	8.55	8.92
Price per ton,	$26 00	$22 50

The samples examined in 1906 contained a little more protein and fat than those analyzed in the preceding year, and the price per ton was considerably less.

Maizeline and Cerealine Feeds.

Analyses on page 39.

These materials are also by-products from corn and do not differ much from corn bran and hominy feed. Four samples of *Maizeline* were analyzed which contained an average of 8.81 per cent. of protein, 7.21 per cent. of fat and 9.68 per cent. of fiber. The average retail price was $25 per ton. One sample of *Cerealine Feed* made by the Cerealine Manufacturing Co., Indianapolis, Ind., was guaranteed to contain 9.19 per cent. of protein and 5.45 per cent. of fat. This sample, however, contained 9.88 per cent. of protein, 11.41 per cent. of fat and 9.92 per cent. of fiber. It sold for $23 per ton.

WHEAT OFFALS.

The by-products from wheat in the manufacture of flours continue to be very popular as sources of protein and fat. The principal wheat by-products found in the market are the bran, middlings, bran and middlings, mixed, and low grade flour. They consist of particular portions of the wheat kernel.

Low Grade Flour.

Analyses on page 39.

Low grade flour or "Red Dog," is the poorest grade of wheat flour, and when sold as food for domestic animals, comes within the provisions of the Feeding Stuff Law. Only three samples were analyzed and carried an average of 14.38 per cent. protein.

AVERAGE ANALYSES AND RETAIL PRICES.

	1905.	1906.
Number samples,	7	3
Protein,	15.51	14.38
Fat,	3.61	3.03
Price per ton,	$29 86	$25 66

Wheat Middlings.

Analyses on pages 39 and 41.

Wheat middlings which contain some of the finest bran, is separated from the fine flour and coarse bran in bolting, and consists chiefly of the inner layers of the covering of wheat kernels.

The amendment to the Feeding Stuff Law which was approved by the Governor in 1905, provides that wheat by-products are legally sold only when the protein and fat are guaranteed. It is gratifying to note that a majority of the Western mills and practically all of the local jobbers are placing a guarantee of composition upon their wheat by-products. Of twenty-six samples of wheat middlings analyzed in 1906 all but ten were sold according to the requirements of the law.

A sample of *Mixed middlings* (Chemist's No. 562), manufactured by Altoona Feed Mills, Altoona, Pa., was guaranteed to contain 8 per cent. of protein and 2 per cent. of fat. It analyzed 10.75 per cent. of protein, 7.03 per cent. of fat and 5.22 per cent. of crude fiber. Apparently this material is composed of wheat middlings and hominy feed and is not included in the general average analysis of wheat middlings.

AVERAGE ANALYSES AND RETAIL PRICES.

	1905.	1906.
Number samples,	49	26
Protein,	15.23	16.64
Fat,	4.02	4.83
Price per ton,	$26 22	$24 17

Bran and Middlings.

Analyses on page 41.

Five samples of wheat bran and wheat middlings, mixed, were analyzed, two of which were not guaranteed. Two samples of *Buckeye Wheat Feed*, which is largely wheat bran, were guaranteed to contain from 13 to 17 per cent. of protein and from 4 to 4.7 per cent. of fat, analyzed 15.81 and 16.38 per cent. of protein and 5.35 and 5.60 per cent. of fat.

AVERAGE ANALYSES AND RETAIL PRICES.

	1905.	1906.
Number samples,	4	5
Protein,	13.99	15.74
Fat,	4.43	5.10
Price per ton,	$24 75	$24 80

Wheat Bran.

Analyses on pages 41 and 43.

Wheat bran consists of the three outer coverings of the wheat berry, together with the aleurone layer which is rich in protein. Bran contains less protein and more crude fiber than middlings, and on the average, a little less fat. Of the 26 samples analyzed, all but 10 were guaranteed according to the provision of the law.

AVERAGE ANALYSES AND RETAIL PRICES.

	1905.	1906.
Number samples,	59	26
Protein,	14.30	14.85
Fat,	4.48	4.79
Price per ton,	$23 74	$22 44

The quality of the several wheat by-products appears to be better than that of the goods manufactured in 1905. The retail price shows a light decrease.

Wheat Bran with Admixture.

Analysis on page 43.

During the year 1906, we examined one sample of *Jersey Mixed Feed,* manufactured by the Indiana Milling Co., Terre Haute, Ind., which consisted of wheat bran and corn cob meal. This feed was guaranteed to contain 12.05 per cent. of protein and 3.20 per cent. of fat. The analysis shows that the material was correctly guaranteed, in that it contained 12.69 per cent. of protein and 3.75 per cent. of fat. It also contained 12.27 per cent. of crude fiber, which is nearly 3 per cent. more than is found in wheat bran of average quality. This material sold for $25 per ton. To the untrained eye such a mixture resembles wheat bran and wheat middlings, and it remains for chemical and microscopical analysis to reveal the presence of ground corn cob. Such material cannot be worth a great deal more than the wheat bran which it contains.

Probably the most common adulterant of wheat bran at the present time is ground corn cob. In the opinion of the writer, the present feeding stuff law should be so modified that mixtures bearing distinctive names shall have affixed to the package in which the material is sold, a printed statement truly certifying the names of the several ingredients of which the article is composed. If the component parts of such a mixture as wheat bran and ground corn cob or of any compounded feed were truly stated on the package in which is sold, the consumer would know just what he was buying and refuse to purchase worthless material.

OAT BY-PRODUCTS.

Analyses on page 43.

Vim Oat Feed, manufactured by the American Cereal Co., Chicago, Ill., is composed largely of oat hulls, and the two samples analyzed contained 5.50 and 5.37 per cent. of protein and 1.98 and 2.50 per cent. of fat.

Friends' and *Royal Oat Feeds*, made by the Great Western Cereal Co., Chicago, Ill., contain a large proportion of oat hulls, and the samples examined were sold with incorrect guarantees for protein, and in several cases the amount of fat present was materially less than what was guaranteed. I can only repeat what I have already published in regard to these materials, that *as a rule as long as the farmer can raise plenty of corn, hay and oats, he cannot afford to purchase any feeding stuff containing less than 14 per cent. of protein.*

MIXED FEEDS.

Proprietary Dairy and Stock Feeds.

Analyses on pages 43 and 45.

Quaker Dairy Feed, made by the American Cereal Co., Chicago, Ill., consists of corn, oats and wheat products and cottonseed meal. One sample (Chemist's No. 450) contained 13.13 per cent. of protein, 2.65 per cent. of fat and 18.14 per cent. of crude fiber.

Sucrene Dairy Feed, made by the American Milling Co., Chicago, Ill., consists chiefly of molasses, gluten feed, cottonseed meal, malt sprouts, corn, oat, wheat and barley products and various weed seeds. Seven samples analyzed contained an average of 15.27 per cent. of protein and 3.82 per cent. of fat.

Dairy Feed, made by the Buffalo Horse & Dairy Feed Co., Buffalo, N. Y., guaranteed to contain 18.00 per cent. of protein and 4.00 per cent. of fat, carried 14.88 per cent. of protein and 4.28 per cent. of fat.

Creamo Dairy Feed, made by Corno Mills Co., East St. Louis, Ill., is composed of gluten meal, products of corn and oats, together with alfalfa. It was guaranteed to contain 15.50 per cent. of protein and 5.10 per cent. of fat, and the average analysis of two samples was 13.79 per cent. of protein and 4.09 per cent. of fat. It also carried 18.99 per cent. of fiber, coming largely from alfalfa.

H-O Dairy Feed, made by the H-O Co., Buffalo, N. Y., consists of corn, products of wheat and oats, peanuts and cottonseed meal, and met its guarantees.

Prize Dairy Feed, made by Milwaukee Feed Co., Milwaukee, Wis., contains molasses, malt sprouts and brewers' grains. It contained a little less protein and fat than was guaranteed.

Protena Dairy Feed, made by Ralston Purina Co., St. Louis, Mo., is composed largely of alfalfa, cottonseed meal, corn and wheat products. The single sample analyzed was low in protein.

Dairy Food, made by the United Breeders Co., Syracuse, N. Y., is a condimental preparation and the ingredients identified were linseed meal, sulphur, charcoal, Epsom salts and fenugreek. It also contains various herbs. Its selling price was $170 per ton.

Hammond Dairy Feed, made by the Western Grain Products Co., Milwaukee, Wis., is a molasses feed containing also distillers' grains, cottonseed meal, malt sprouts, and gluten feed. Five samples analyzed averaged 15.21 per cent. of protein against a guarantee of 17 per cent.

Acme Stock Food, made by the Acme Food Co., Chicago, Ill., is a condimental preparation selling for $220 per ton. The ingredients identified were linseed meal, corn, rice, rice hulls, salt, sulphur and fenugreek.

Blatchford's Calf Meal, made by J. W. Barwell, Waukegan, Ill., is also condimental, as it contains a wheat product, cottonseed, linseed and bean meals, fenugreek and anise seed. It sold for $70 per ton.

Green Diamond Sugar Feed, is substantially the same as Sucrene Dairy Feed, and the average analysis of five samples was 13.37 per cent. of protein and 2.77 per cent. of fat, against a guarantee of 16.50 per cent. of protein and 3.50 per cent. of fat.

Detweiler's Horse and Cattle Powder, made by W. C. Detweiler, Allentown, Pa., is a condimental preparation composed of gentian, sulphur, saltpetre, copperas, Epsom salts, fenugreek, ginger, fennel and charcoal. It carried 10.13 per cent. of protein, 35.11 per cent. of ash and sold for $170 per ton.

Flaxseed Feed, also made by W. C. Detweiler, Allentown, Pa., is a condiment composed of ground flaxseed, saltpetre, gentian and charcoal. It contained 21.31 per cent. of protein, 32.29 per cent. of fat, 7.96 per cent. of ash and sold for $130 per ton.

Mueller's *Molasses Grains*, made by E. P. Mueller, Milwaukee, Wis., contains molasses, malt sprouts and brewers' grains. The guarantee for the feed is improperly stated. *Protein and fat should be guaranteed separately.*

Proprietary Horse Feeds.

Analyses on page 45.

Sucrene Horse Feed, made by the American Milling Co., Chicago, Ill., is a molasses feed which also contains gluten feed, and cereal products. Three out of four samples analyzed were deficient in protein.

Horse Feed, made by the Buffalo Cereal Co., Buffalo, N. Y., consists of corn and oat products, contains 11.75 per cent. of protein, 5.05 per cent. of fat and 11.57 per cent. of fiber. It sells for $25 per ton.

Horse Feed, made by the Buffalo Horse and Dairy Feed Co., Buffalo, N. Y., is a carbohydrate feed, and the sample analyzed contained 7.75 per cent. of protein, 3.89 per cent. of fat and 13.49 per cent. of fiber.

Corno Horse Feed, made by the Corno Mills Co., East St. Louis, Ill., consists of alfalfa, cracked corn and oat feed. The sample analyzed was deficient in protein and fat and contained 15.81 per cent. of fiber.

H-O Co.'s Horse Feed, made by the H-O Co., Buffalo, N. Y., contains corn, products of oats and wheat and peanuts. The guarantees were well maintained.

Husted's Horse Feed, made by the Husted Mill and Elevator Co., Buffalo, N. Y., is a fortified feed containing 10.13 per cent. of protein, 3.93 per cent. of fat and 12 per cent. of fiber. It sold for $25 per ton.

Proprietary Poultry Feeds.

Analyses on page 45.

American Poultry Food, made by the American Cereal Co., Chicago, Ill., guaranteed to contain 14 per cent. of protein and 4.50 per cent. of fat, analyzed 12.88 per cent. of protein, 6.55 per cent. of fat and 5.45 per cent. of crude fiber. It sold for $31.30 per ton. The sample analyzed apparently was composed of cottonseed meal, corn and wheat by-products.

Poultry Feed, manufactured by the Buffalo Mills Co., Batavia, N. Y., is a fortified food, guaranteed to contain 17 per cent. of protein and 5.50 per cent. of fat. The guarantees were well maintained and the protein found exceeded the guarantee by 2.75 per cent.

Two samples of *H-O Co.'s Poultry Feed* were analyzed, showing an average of 17.50 per cent. of protein and 5.42 per cent. of fat, against a guarantee of 17 per cent. of protein and 5.50 per cent. of fat. This material contains wheat bran, corn, rolled oats and peanuts.

Chick Manna, made by F. P. Cassel, Lansdale, Pa., well maintained its minimum guarantee of 12 per cent. of protein and 4 per cent. of fat. This material contained only 2.17 per cent. of crude fiber and sold in small lots for eight cents per pound.

Poultry Mixture, manufactured by Jacob Walter's Sons, Easton, Pa., stated by the manufactures to contain wheat bran, force screenings, oatmeal, cracked corn, oil cake meal, and fenugreek. An examination of the sample did not reveal the presence of oil cake meal. This material is usually sold for $35 per ton. Analysis showed it to contain 12.31 per cent. of protein, 5.13 per cent. of fat and 5.59 per cent. of crude fiber.

Poultry Mixture, made by Samuel Yeakle, Fort Washington, Pa., was composed chiefly of cracked corn, wheat bran, ground linseed cake, gluten meal and oat feed. This material contained 16.69 per cent. of protein, 3.77 per cent. of fat and 8.42 per cent. of crude fiber. It sold for $30 per ton.

Miscellaneous Chop Feeds.

Analyses on page 45.

Twenty-two samples of feeds analyzed were classified as "chops." A large proportion of the feeds were mixtures of the cereals, chiefly corn and oats, although some contained in addition small quantities of barley, wheat and rye. Two samples were musty when analyzed, and consequently, a portion of the fat originally present was destroyed. These two samples were not included in the general average. Three samples of chop feeds analyzed contained over 10 per cent. of crude fiber, indicating a probable substitution of oat hulls for whole oats in the mixtures.

Corn and Oat Feeds.

Analyses on page 45.

Three samples of *Quaker Dairy Corn and Oat Feed*, made by the American Cereal Co., of Chicago, Ill., showed an average of 12.77 per cent. of protein, 3.94 per cent. of fat and 16.59 per cent. of crude fiber. The high fiber content of this feed indicates the presence of quite a proportion of oat hulls.

Victor Corn and Oat Feed, made by the same company, is also a mixture of corn, light oats and oat hulls. It was represented by three samples, showing an average of 8 per cent. of protein, 4.37 per cent. of fat and 12.46 per cent. of crude fiber.

Corn, Oats and Barley Feed.

Analyses on page 47.

Seven samples of corn, oats and barley feed were analyzed, six of which were sold under the name of *Schumacher's Stock Feed*. This article is made by the American Cereal Co., Chicago, Ill., and the average of these analyses showed it to contain somewhat less protein than the minimum guarantee of 11 per cent. This brand of food was placed in the markets in 1906 under a lower guarantee than the company used the preceding year, and, consequently, there is a better agreement between the actual analysis and the guarantee.

MISCELLANEOUS FEEDS.

Analyses on page 47.

One sample of feed sold as *buckwheat bran* was analyzed and found to contain 14.81 per cent. of protein, 3.29 per cent. of fat and 28.57 per cent. of crude fiber. Two samples of *buckwheat middlings* showed an average protein content of 14.96 per cent., which is considerably lower than what buckwheat middlings of good quality should carry. Three samples of *rye middlings* and one sample of *crushed oats* were analyzed and found to be of fair quality. The collection also contained two samples of *dried beet pulp*, manufactured by the Rock County Sugar Co., Janesville, Wis. These averaged 11.34 per cent. protein, 0.79 per cent. fat and 13.29 per cent. fiber. Dried beet pulp is the residue from the manufacture of beet sugar. It consists of the tissues of the beet from which the sugars and some of the soluble compounds have been removed by water. The residue is dried and placed on the market in that condition. It naturally contains a high percentage of fiber, and as the protein is low, it is classed among those feeds which are not economical for the dairyman to purchase. One sample of *screenings* put out by the American Cereal Co., Chicago, Ill., contained 12.25 per cent. of protein and 3.35 per cent. of fat.

ANIMAL BY-PRODUCTS.

Analyses on page 47.

Four samples were taken and classified as animal by-products. One sample of *meat meal* manufactured by Baugh & Sons Co., Philadelphia, Pa., contained 50.58 per cent. of protein and 14.60 per cent. of fat, against a minimum of 57 per cent. protein and 16 per cent. fat. One sample of *ground meat* and one sample of *crissel,* both manufactured by Spratts Patent, Ltd., Newark, N. J., were analyzed. The former was guaranteed to contain 55 per cent. of protein and 16 per cent. of fat, and showed upon analysis to contain 51.35 per cent. of protein and 16.36 per cent. of fat. The latter contained 52.38 per cent. protein and 18.66 per cent. fat, against a guarantee of 62 per cent. protein and 17.50 per cent. fat. One sample of material sold as *chicken feed,* imported by Taylor Bros., Camden, N. J., was analyzed and found deficient in protein and fat. It contained 36.63 per cent. protein and 12.62 per cent. fat, against a guarantee of 45 per cent. protein and 15 per cent. fat. It sold for $60 per ton.

ANALYSES OF SAMPLES OF FEEDING STUFFS COLLECTED BY SPECIAL AGENTS.

The following table (X) shows the partial analyses of samples of feeding stuffs collected by Special Agents of the Department of Agriculture during the year 1906.

The table also gives the retail prices per ton.

TABLE X. ANALYSES OF SAMPLES OF

Chemist's number.	Name and Address of Manufacturer or Jobber.	Sampled at	Agent's number.
531	American Cotton Oil Co., Memphis, Tenn.	Montrose, Brown & Fassett, ...	49
392	American Cotton Oil Co., Memphis, Tenn.	West Point, L. W. Matten, ...	53
445	American Cotton Oil Co., Memphis, Tenn.	Hatfield, Geo. S. Snyder, ...	106
355	American Cotton Oil Co., Memphis, Tenn.	Bechtelsville, Stauffer & Moyer, ...	16
439	Battle & Co., Memphis, Tenn., ...	Allentown, G. B. Shelly, Est., ...	100
428	Chapin & Co., Buffalo, N. Y., ...	Pipersville, H. H. Randt, ...	89
418	Humphreys, Godwin & Co., Memphis, Tenn.	Schwenksville, Horace B. Kratz, ...	79
351	Humphreys, Godwin & Co., Memphis, Tenn.	Linfield, Jacob Trinley, ...	12
359	Wells, J. Lindsey Co., Memphis, Tenn.,	Port Kennedy, Jarrett & Rowal, ...	20
354	American Linseed Co., Chicago, Ill., ...	Linfield, G. E. Brownback, ...	15
470	American Linseed Co., Chicago, Ill., ...	Pennsburg, Hillegass & Krauss, ...	131
340	American Linseed Co., Chicago, Ill., ...	Royersford, C. F. McKee, ...	1
417	Cleveland Oil Co., Cleveland, O., ...	Schwenksville, Geo. Shoemaker, ...	78
537	American Linseed Co., New York, N. Y.,	Montrose, James Cooper, ...	55
441	American Linseed Co., New York, N. Y.,	Allentown, G. B. Shelly, Est., ...	102
373	Mann Bros. Co., The, Buffalo, N. Y., ..	Reading, Koch, Bush & Co., ...	34
544	Thompson & Co., Allegheny, Pa., ...	Altoona, P. W. Poet, ...	62
443	Grove Linseed Co., The, Philadelphia, Pa.	Ardmore, Edward S. Murry, ...	104
349	Chapin & Co., Philadelphia, Pa., ...	Iron Bridge, H. T. Hunsicker, ...	10
357	Chapin & Co., Philadelphia, Pa., ...	Bechtelsville, Alfred Siesholtz, ...	18
361	Continental Cereal Co., Peoria, Ill., ...	Norristown, Simpson Bros., ...	22
477	Manhatten Gluten Co., Peoria, Ill., ...	Perkiomenville, E. S. Brey & Co., ...	138
460	Anheuser-Busch Brewing Association, St. Louis, Mo.	Willow Grove, J. Dyre Moyer, ...	121
391	Eby, Jonas T., & Son, Lancaster, Pa.,..	Lower Providence, N. Byron Keyser, ...	52
370	Hancock & Co., Philadelphia, Pa., ...	Douglasville, F. H. Brown, ...	31
456	Krause, C. A., Grain Co., Milwaukee, Wis.	Phoenixville, Cutler Bros., ...	117
362	Poth Brewing Co., Philadelphia, Pa., ..	Norristown, Simpson Bros., ...	23
398	Unknown, ...	Sinking Springs, W. F. Krick, ...	59
532	Glucose Sugar Refining Co., The, Chicago, Ill.	Montrose, J. C. Harrington, ...	50
540	Glucose Sugar Refining Co., The, Chicago, Ill.	Montrose, Lewis T. Harrower, ...	58
410	Glucose Sugar Refining Co., The, Chicago, Ill.	Breinigsville, O. L. Kerchner, ...	71

FEEDING STUFFS COLLECTED IN 1906.

Name of Feeding Stuff	Moisture.	Protein.		Fat.		Crude fiber found.	Price per ton.	Chemist's number.
		Found.	Guaranteed.	Found.	Guaranteed.			
OIL CAKE MEALS.								
Cottonseed Meal.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.		
Cottonseed meal, prime,	6.72	41.00	41.00	9.43	9.00	....	$32 00	531
Cottonseed meal, prime,	6.50	42.38	41.00	8.78	9.00	....	32 00	392
Cottonseed meal, prime,	6.42	42.88	41.00	9.13	9.00	....	30 00	445
Cottonseed meal, prime,	7.67	39.56	41.00	8.87	9.00	....	29 00	355
Cottonseed meal, Battle,	6.02	40.56	43.00	9.83	9-10	....	32 00	439
Cottonseed meal,	7.55	39.44	41-43	8.25	9.00	....	29 00	428
Cottonseed meal, Dixie,	7.30	41.50	41.00	9.35	9.00	....	31 04	418
Cottonseed meal, Dixie,	6.44	42.25	43.00	8.89	9.00	....	30 45	351
Cottonseed meal, Star,	6.49	41.31	38.62	9.27	9.00	....	32 00	359
Average,	6.79	41.21	....	9.09	....	....	30 83	......
Average digestible,	....	36.26	....	8.45	....	....	....	......
Linseed Meal, N. P.								
Flaxmeal, Cleveland,	8.50	36.25	36-40	3.50	....	....	30 00	354
Flaxmeal, Cleveland,	8.37	36.31	36-38	2.60	1-3	....	30 00	470
Flaxmeal, Cleveland,	8.75	35.94	36-40	3.54	1-3	....	32 00	340
Linseed meal,	7.92	34.94	....	2.62	....	....	30 10	417
Average,	8.38	35.86	....	3.06	....	....	30 52	......
Average digestible,	....	30.48	....	2.96	....	....	....	......
Linseed Meal, O P.								
Linseed meal,	9.55	33.56	32-36	6.84	5-7	....	32 00	537
Linseed meal,	8.75	33.75	32-36	6.93	5-7	....	32 00	441
Linseed meal,	8.75	33.94	34.13	7.90	6.05	....	40 00	373
Linseed meal,	7.37	33.75	32-37.5	7.39	5.5-8.5	....	45 00	544
Average,	8.60	33.75	....	7.26	....	....	37 25	......
Average digestible,	....	30.03	....	6.46	....	....	....	......
OIL SEED MEAL.								
Flaxseed Meal.								
Flaxseed meal,	....	22.58	....	35.10	....	....	66.00	443
Digestible,	....	20.54	....	30.18	....	....	....	......
DISTILLERY AND BREWERY BY-PRODUCTS.								
Distillers' Grains.								
Ajax flakes,	5.76	29.63	33-35	10.56	12.00	13.37	29 00	349
Ajax flakes,	7.90	31.56	33-35	12.10	12.00	....	28 00	357
Continental gluten feed,	5.85	31.00	35.00	14.57	12.50	9.08	26 00	361
Manhatten gluten feed,	6.12	31.56	34.00	14.93	12.00	....	26 00	477
Average,	6.41	30.94	....	13.04	....	11.22	27 25	......
Average digestible,	....	22.55	....	11.86	....	....	....	......
Brewers' Grains.								
Dried brewers' grains,	8.30	22.25	....	6.93	....	16.34	23 00	460
Digestible,	....	17.57	....	6.30	....	8.66	....	......
Malt Sprouts.								
Malt sprouts,	9.07	24.75	....	2.90	....	....	20 00	391
Malt sprouts,	10.47	25.00	....	1.28	....	....	20 00	370
Malt sprouts,	8.75	25.19	26.50	2.03	1.25	....	19 00	456
Malt sprouts,	10.01	29.31	20-23	1.88	1.80	....	20 00	362
Malt sprouts,	8.86	23.19	....	2.53	....	....	19 00	398
Average,	9.43	25.49	....	2.12	....	....	19 60	......
Average digestible,	....	20.39	....	2.12	....	....	....	......
MAIZE BY-PRODUCTS.								
Gluten Feed.								
Gluten feed, Buffalo,	6.77	26.06	24.00	3.38	2.50	....	26 00	532
Gluten feed,	7.39	23.38	25.00	3.40	2.50	....	26 00	540
Gluten feed, Buffalo,	8.70	23.25	....	4.05	....	....	26 00	410

TABLE X. ANALYSES OF SAMPLES OF

Chemist's number.	Name and Address of Manufacturer or Jobber.	Sampled at	Agent's number.
382	Glucose Sugar Refining Co., The, Chicago, Ill.	Fleetwood, Schaeffer, Warner & Co.,	43
356	Glucose Sugar Refining Co., The, Chicago, Ill.	Bechtelsville, Alfred Siesholtz,	17
372	Hancock & Co., Philadelphia, Pa.,	Douglasville, G. C. Reigner & Co.,	33
426	New York Glucose Co., Edgewater, N. J.	Doylestown, J. W. Stilwagon & Co.,	87
432	St. Louis Syrup and Preserving Co., St. Louis, Mo.	So. Bethiehem, Benner & Person,	93
505	St. Louis Syrup and Preserving Co., St. Louis, Mo.	Troy, Snedeker & Mitchel,	23
529	Warner Sugar Refining Co., Waukegan, Ill.	Montrose, Brown & Fassett,	47
504	Unknown,	Canton, H. Crawford & Sons,	22
402	Unknown,	Robesonia, Frank S. Ohl,	62
413	Atlas Cereal M'f'g Co., Merchantville, N. J.	Lansdale, A. C. Godshall,	74
447	Baringer Bros., Philadelphia, Pa.,	Souderton, S. D. Hunsberger,	108
343	Baringer Bros., Philadelphia, Pa.,	Yerkes, Landes Bros.,	4
353	Evans, J. B., & Co., Pottstown, Pa.,	Linfield, G. E. Brownback,	14
480	Glucose Sugar Refining Co., Chicago, Ill.	Rudy, Groff Bros.,	141
483	Glucose Sugar Refining Co., Chicago, Ill.	Spring Mount, J. W. Kline,	144
473	Glucose Sugar Refining Co., Chicago, Ill.	Red Hill, O. D. Reiter,	134
427	Baringer Bros., Philadelphia, Pa.,	Plumsteadville, A. Y. Snyder,	88
451	Eby & Son, Lancaster, Pa.,	Richland Center, L. B. Ritter,	112
425	Evans Milling Co., Indianapolis, Ind.,	Doylestown, J. W. Stilwagon & Son,	86
511	Husted Mill and Elev. Co., Buffalo, N. Y.	Troy, H. M. Spalding & Son,	29
424	Miner-Hillard Milling Co., Wilkes-Barre, Pa.	Doylestown, H. S. Beidler,	85
506	Rankin, M. G., & Co., Milwaukee, Wis.,	Troy, Snedeker & Mitchel,	24
455	American Hominy Co., Indianapolis, Ind.	Oaks, W. M. Keyser,	116
481	Wager, C. W., & Co., Philadelphia, Pa.,	Rudy, Groff Bros.,	142
358	Wager, C. W., & Co., Philadelphia, Pa.,	Port Kennedy, Jarrett & Roan,	19
367	Wager, C. W., & Co., Philadelphia, Pa.,	Pottstown, M. B. Tyson & Son,	28
414	Cerealine M'f'g Co., Indianapolis, Ind.,	North Wales, J. Hiester & Son,	75
404	Scattergood, S. F., & Co., Philadelphia, Pa.	Hamburg, Geo. Walters,	65
385	Berger-Crittenden Mill. Co., Milwaukee, Wis.	Fleetwood, Schlegel, Adam & Co.,	46
436	Christian, L., & Co., Minneapolis, Minn.	Allentown, J. E. Schoen,	97
502	Andrews, Son & Co., Penn Yan, N. Y.,	Canton, Preston Bros.,	20
514	Blackwell & Gambell, Antesfort, Pa.,	Jersey Shore, Blackwell & Gambell,	32
520	Dayton, G. A., Towanda, Pa.,	Towanda, W. F. Dittrick,	38
366	Evans, J. W., & Co., Pottstown, Pa.,	Pottstown, S. B. Wagner & Co.,	27
508	Evert, Auchenbaugh & Co., Waseca, Minn.	Troy, Snedeker & Mitchell,	26
498	Fleming & Shollenberger, Hepburnville, Pa.	Williamsport, D. F. Deitrick,	16
468	Fritch, N. D. & D. D., Macungie, Pa.,	Macungie, J. Singmaster & Co.,	129

FEEDING STUFFS COLLECTED IN 1906—Continued.

Name of Feeding Stuff.	Moisture.	Protein.		Fat.		Crude fiber found.	Price per ton.	Chemist's number.
		Found.	Guaranteed.	Found.	Guaranteed.			
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.		
Gluten feed,	6.60	24.31	....	4.20	....	....	$26 00	382
Gluten feed. Buffalo,	6.80	25.00	25.00	3.79	3.00	....	26 00	356
Gluten feed,	7.31	26.25	....	3.37	....	....	27 00	372
Gluten feed,	5.91	27.94	23.00	3.43	3.00	....	25 00	426
Gluten feed, Tiger,	7.50	24.13	....	4.98	....	....	25.40	432
Gluten feed, Tiger,	8.32	26.69	25.00	3.00	2.75	....	25 00	505
Gluten feed, Warner's,	8.37	24.75	25.00	3.38	3.00	....	26 00	529
Gluten feed.	6.97	24.31	....	5.60	....	6.79	25 00	504
Gluten feed,	7.75	24.50	....	3.78	....	....	24 00	402
Average,	7.36	25.04	....	3.86	....	....	25 61	......
Average digestible,	....	21.53	....	3.24	....	....	....	......
Corn Bran.								
Corn bran,	6.85	11.19	12.96	8.57	5.72	8.34	20 00	413
Corn bran, No. 100,	6.75	9.25	....	7.68	....	8.92	23 50	447
Corn bran,	6.47	10.44	....	7.94	....	8.23	23 00	343
Corn bran,	8.57	10.25	....	8.32	....	6.39	23 00	353
Corn bran, Fancy,	7.10	11.75	13.00	3.45	3.00	14.49	20 00	480
Corn bran,	8.20	10.94	....	3.50	....	....	20 00	483
Corn bran, Fancy,	7.17	11.31	13.00	4.05	3.00	14.42	20 00	473
Average,	7.30	10.73	....	6.21	....	10.13	21 35	......
Hominy Feed.								
Hominy feed, Beaver,	8.20	10.75	9.88	9.43	7.31	2.16	22 00	427
Hominy feed,	6.68	10.94	....	7.98	....	2.44	21 00	451
Hominy feed,	7.37	11.00	11.00	10.15	9.00	5.07	21 00	425
Hominy feed, American,	7.00	10.69	10.24	9.70	7.72	5.19	25 00	511
Hominy feed, steam cooked,	5.65	10.31	10-12	7.90	7.5-9	4.64	22 00	424
Hominy feed, Sterling White,	7.05	10.69	11.00	8.40	7.25	4.79	24 00	506
Average,	6.99	10.73	....	8.92	....	4.05	22 50	......
Average digestible,	....	7.29	....	8.20	....	....	....	......
Maizeline.								
Maizeline,	6.60	8.81	....	6.69	....	10.14	24 00	455
Maizeline,	6.67	9.25	....	7.13	....	8.24	25 00	481
Maizeline,	6.77	8.25	....	7.76	....	10.14	26 00	358
Maizeline,	5.80	8.94	....	7.27	....	10.22	25 00	367
Average,	6.46	8.81	....	7.21	....	9.68	25 00	......
Cerealine Feed.								
Cerealine feed, No. 1,	7.07	9.88	9.19	11.41	5.45	9.92	23 00	414
WHEAT OFFALS.								
Low Grade Flour.								
Low grade flour,	10.72	11.63	....	2.22	....	....	26 00	404
Red dog flour,	10.10	16.25	....	3.63	....	....	26 00	385
Red dog flour,	10.17	15.25	....	3.23	....	....	25 00	436
Average,	10.33	14.38	....	3.03	....	....	25 66	......
Average digestible,	....	11.50	....	2.60	....	....	....	......
Wheat Middlings.								
Middlings,	10.70	14.25	....	4.20	....	3.92	24 00	502
Middlings,	12.27	16.19	11-14	4.03	3-5	3.77	25 00	514
Middlings,	9.52	16.44	....	5.78	....	5.29	28 00	520
Middlings, white,	11.47	13.00	....	3.38	....	....	27 00	366
Middlings, Eaco,	8.80	17.50	14-17	6.30	3-5	7.02	23 00	508
Middlings,	10.35	15.81	15-19	4.28	3-6	....	25 00	498
Middlings,	9.97	15.81	12-14	3.58	2-4	5.32	22 00	468

TABLE X. ANALYSES OF SAMPLES OF

Chemist's number.	Name and Address of Manufacturer or Jobber.	Sampled at	Agent's number.
387	Gabel, D., Gabelsville, Pa.,	Boyertown, E. & J. W. Leaver,	48
548	Hunter Bros. Mill. Co., St. Louis, Mo.,	Altoona, Spanogle & Yeager,	66
476	Kline, Milton, Pennsburg, Pa.,	Greenlane, H. N. Scholl,	137
533	Listman Mill Co., La Crosse, Wis.,	Montrose, J. C. Harrington,	51
559	Millers' Products Co., The, Chicago, Ill.,	Altoona, Klepser Bros,	77
517	Neff & Wooster, Larrys Creek, Pa.,	Jersey Shore, Sallada Bros.,	35
546	Northern Milling Co., Chicago, Ill.,	Altoona, Central Feed Co.,	64
528	Northwestern Consolidated Mill. Co., The, Minneapolis, Minn.	Montrose, Brown & Fassett,	46
530	Northwestern Consolidated Mill. Co., The, Minneapolis, Minn.	Montrose, Brown & Fassett,	48
542	Pillsbury Flour Mills, Minneapolis, Minn.	Altoona, P. W. Poet,	60
442	Suplee, Henderson, Conshohocken, Pa.,	Bryn Mawr, William Ramsey,	103
364	Wager, C. W., & Co., Philadelphia, Pa.,	Royersford, E. P. Kern,	25
491	Wager, C. W., & Co., Philadelphia, Pa.,	Williamsport, Jacob Thomas,	8
496	Washburn-Crosby Co., Minneapolis, Minn.	Williamsport, M. E. Donnell & Co.,	13
485	Washburn-Crosby Co., Minneapolis, Minn.	Williamsport, Gohl & King,	2
454	Washburn-Crosby Co., Minneapolis, Minn.	Oaks, W. M. Keyser,	115
554	Webher, S. E. & J. H., Centre Hall, Pa.,	Altoona, H. H. Langdon,	72
472	Winnebago Flour Mills,	Red Hill, O. D. Reiter,	133
419	Unknown,	West Conshohocken, J. C. Crawford,	80
562	Altoona Feed Mills, Altoona, Pa.,	Altoona, Altoona Feed Mills,	80
523	American Cereal Co., The, Chicago, Ill.,	Towanda, M. J. Long,	41
526	American Cereal Co., The, Chicago, Ill.,	Towanda, B. F. Myer,	44
534	Cattle and Poultry Food Co., Binghamton, N. Y.	Montrose, J. C. Harrington,	52
541	Kehlor Bros., St. Louis, Mo.,	Montrose, L. T. Harrower,	59
538	Plant, G. P., Mill. Co., St. Louis, Mo.,	Montrose, Slatter & Roberts,	56
420	Berger-Crittenden Mill. Co., Milwaukee, Wis.	Newtown, H. H. Mahan,	81
515	Blackwell & Gambell, Antesfort, Pa.,	Jersey Shore, Blackwell & Gambell,	33
536	Cavalier Roller Mill Co., Cavalier, N. Dakota.	Montrose, James Cooper,	54
388	Gabel, D., Gabelsville, Pa.,	Boyertown, E. & J. Leaver,	49
469	Gooding, Coxe & Co., Minneapolis, Minn.	Slatington, A. J. Kern,	130
519	Hagerman, T. H., Towanda, Pa.,	Towanda, W. F. Dittrick,	37
486	Husted Mill. and Elev. Co., Buffalo, N. Y.	Williamsport, Gohl & King,	3
500	Kemper, W. T., Elevator Co., Kansas City, Mo.	Williamsport, Hayes, Pidcoe & Co.,	18
488	Kern, J. B. A., & Son, Milwaukee, Wis.,	Williamsport, W. F. Coleman,	5
507	Lackawanna Mill. and Elev. Co., Buffalo, N. Y.	Troy, Snedeker & Mitchell,	25
503	Mapleton Milling Co., Mapleton, Minn.,	Canton, Preston Bros.,	21
549	Mapleton Milling Co., Mapleton, Minn.,	Altoona, Spanogle & Yeager,	67
516	Neff & Wooster, Larrys Creek, Pa.,	Jersey Shore, Sallada Bros.,	34
547	New Prague Flour Mill Co., New Prague, Minn.	Altoona, Central Feed Co.,	65
465	Northwestern Consolidated Milling Co., Chicago, Ill.	Bristol, J. Quicksall,	126
560	Norton & Co., Lockport, Ill.,	Altoona, Klepser Bros.,	78
527	Norton & Co., Lockport, Ill.,	Sayre, Valley Supply Co.,	45
543	Pillsbury Flour Mill Co., Minneapolis, Minn.	Altoona, P. W. Poet,	61
512	Pillsbury Flour Mill Co., Minneapolis, Minn.	Troy, H. M. Spalding & Son,	30
405	Scattergood, S. F., & Co., Philadelphia, Pa.	Hamburg, Geo. Walters,	66
493	Truckenmiller, V. S., & Son, Watsontown, Pa.	Williamsport, S. Springman,	10
490	Truckenmiller, V. S., & Son, Watsontown, Pa.	Williamsport, Jacob Thomas,	7

FEEDING STUFFS COLLECTED IN 1906—Continued.

Name of Feeding Stuff.	Moisture.	Protein.		Fat.		Crude fiber found.	Price per ton.	Chemist's number.
		Found.	Guaranteed.	Found.	Guaranteed.			
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.		
Middlings,	8.97	17.25	....	5.30	....	....	$24 00	387
Middlings, winter wheat,	10.87	16.00	16.00	4.85	4.00	....	27 00	548
Middlings,	10.95	16.25	....	2.90	....	6.22	23 00	476
Middlings, Elmco standard,	10.17	17.31	20-22	5.58	6.56	....	23 00	533
Middlings,	9.47	16.25	14-15	4.88	4-5	8.22	26 00	559
Middlings,	12.12	16.00	....	3.26	....	2.12	28 00	517
Middlings,	10.22	16.00	10-15	4.53	2-5	....	25 00	546
Middlings,	8.15	17.94	16.75	6.23	5.00	9.57	23 00	528
Middlings, XXX Comet,	9.85	18.50	20.25	5.70	5.25	3.34	27 00	530
Middlings,	9.57	17.50	14-15	5.28	4-5	....	25 00	542
Middlings,	9.65	17.75	....	5.53	....	....	22 00	442
Middlings, white,	10.85	17.31	....	4.93	....	....	23 00	364
Middlings,	10.12	17.25	13-16	5.85	2-5	....	22 00	491
Middlings, standard,	10.00	17.25	18.00	5.68	4.00	....	21 00	496
Middlings, standard,	9.37	17.44	17.00	5.53	4.00	....	25 00	485
Middlings,	10.20	17.69	18.25	4.55	4.12	....	23 00	454
Middlings,	11.27	15.69	15-18	4.00	4-5	....	23 00	554
Middlings,	9.50	18.56	....	5.53	....	8.19	21 50	472
Middlings,	11.75	15.75	....	4.15	....	....	23 00	419
Middlings, mixed,	9.30	10.75	8.00	7.03	2.00	5.22	26 00	562
Average,*	10.23	16.64	....	4.83	....	5.72	24 17	......
Average digestible,	....	13.31	....	4.15	....	1.88	....	......
Bran and Middlings.								
Wheat feed, Buckeye,	9.87	16.38	13-17	5.60	4-4.7	7.65	25 00	523
Wheat feed, Buckeye,	9.85	15.81	13-17	5.35	4-4.7	....	25 00	526
Mixed feed, Sunlight fancy,	10.10	16.19	19.50	5.17	5.96	6.66	26 00	534
Mixed feed,	9.53	15.81	....	4.63	....	8.19	24 00	541
Bran and middlings, winter wheat,	10.75	14.50	....	4.75	....	7.27	24 00	538
Average,	10.02	15.74	....	5.10	....	7.44	24 80	......
Average digestible,	....	12.43	....	3.87	....	2.31	....	......
Wheat Bran.								
Bran, Badger,	8.90	15.13	....	4.80	....	10.02	21 00	420
Bran,	12.50	14.94	11-14	4.40	3-5	8.77	20 00	515
Bran,	10.29	14.25	....	5.15	....	9.40	22 00	536
Bran,	8.74	14.44	....	6.08	....	10.39	22 00	388
Bran, spring,	9.32	14.81	....	4.73	....	11.02	21 00	469
Bran,	11.25	14.81	....	4.63	....	8.84	26 00	519
Bran,	9.80	15.81	....	4.70	....	9.52	23 00	486
Bran,	10.50	16.88	15-17	4.78	3.5-4.5	....	20 00	500
Bran, Eagle,	9.82	14.19	15.00	5 23	4.00	....	23 00	488
Bran,	8.70	14.19	14.05	5.25	5.12	11.27	20 00	507
Bran,	9.22	14.69	14.10	5.15	5.40	....	19.00	503
Bran,	10.60	14.69	14.10	4.97	5.40	10.12	24 00	549
Bran,	11.52	15.38	....	4.63	....	8.59	25 00	516
Bran, Go-Far,	9.90	14.06	14.00	5.05	4.75	11.04	24 00	547
Bran,	9.30	14.50	10.25	4.75	4.10	11.44	24 00	465
Bran,	9.75	15.31	9-14	4.21	2-4.5	9.92	24 00	560
Bran,	9.67	15.25	9-14	5.20	2-4.5	10.87	22 00	527
Bran,	11.25	15.31	12.25-14.25	5.05	4-4.25	9.97	25 00	543
Bran,	11.12	13.75	12.25-14.25	5.18	4-4.25	11.34	20 00	512
Bran,	8.55	14.25	....	4.65	....	10.64	20 50	405
Bran,	10.10	14.94	14-17	4.08	3-4.5	....	24 00	493
Bran,	11.00	15.50	14-17	4.10	3-4.5	....	22 00	490

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*Excluding No. 562.

TABLE X. ANALYSES OF SAMPLES OF

Chemist's number.	Name and Address of Manufacturer or Jobber.	Sampled at	Agent's number.
509	Washburn-Crosby Co., Minneapolis, Minn.	Troy, Preston Bros.,	27
344	Unknown,	Yerkes, Landes Bros.,	5
552	Unknown,	Altoona, H. H. Langdon,	70
525	Unknown,	Towanda, MacAfee & Stevens,	43
561	Indiana Milling Co., Terre Haute, Ind.,	Altoona, Altoona Feed Mills,	79
471	American Cereal Co., Chicago, Ill.,	Pennsburg, Hillegass & Krauss,	132
448	American Cereal Co., Chicago, Ill.,	Souderton, Moyer & Son,	109
342	Great Western Cereal Co., Chicago., Ill.,	Royersford, C. F. McKee,	3
482	Great Western Cereal Co., Chicago, Ill.,	Spring Mount, J. W. Kline,	143
408	Great Western Cereal Co., Chicago, Ill.,	Kutztown, J. A. Schwoyer,	69
369	Great Western Cereal Co., Chicago, Ill.,	Douglassville, F. M. Brown,	20
397	Great Western Cereal Co., Chicago, Ill.,	Sinking Spring, W. F. Krick,	58
459	Great Western Cereal Co., Chicago, Ill.,	Willow Grove, J. Dyre Moyer,	120
401	Great Western Cereal Co., Chicago, Ill.,	Robesonia, Frank S. Ohl,	61
453	Unknown,	Richland Center, L. B. Ritter,	114
450	American Cereal Co., Chicago, Ill.,	Perkasie, William Renner,	111
394	American Milling Co., Chicago, Ill.,	West Point, W. K. Hubner,	55
341	American Milling Co., Chicago, Ill.,	Royersford, C. F. McKee,	2
406	American Milling Co., Chicago, Ill.,	West Leesport, S. H. Lenhart & Sons,	67
452	American Milling Co., Chicago, Ill.,	Richland Center, L. B. Ritter,	113
403	American Milling Co., Chicago, Ill.,	Hamburg, J. M. Savage & Co.,	64
381	American Milling Co., Chicago, Ill.,	Fleetwood, Schaeffer, Warner & Co.,	42
539	American Milling Co., Chicago, Ill.,	Montrose, Slatter & Roberts,	57
380	Buffalo Horse and Dairy Feed Co., Buffalo, N. Y.	Reading, Strunk & Moyer,	41
390	Corno Mills, East St. Louis, Ill.,	Lower Providence, N. Byron Keyser,	51
352	Corno Mills, East St. Louis, Ill.,	Linfield, Jacob Trinley,	13
463	H-O Co., Buffalo, N. Y.,	Langhorne, Henry Palmer,	124
535	Milwaukee Feed Co., Milwaukee, Wis.,	Montrose, James Cooper,	53
396	Ralston Purina Co., St. Louis, Mo.,	West Point, W. K. Hubner,	57
S 2	United Breeders Co., Syracuse, N. Y.,	Smethport, E. T. Daly,	
411	Western Grain Products Co., Milwaukee Wis.	Trexlertown, John Geisler & Son,	72
393	Western Grain Products Co., Milwaukee, Wis.	West Point, L. W. Matten,	54
383	Western Grain Products Co., Milwaukee, Wis.	Fleetwood, Schlegel, Adam & Co.,	44
409	Western Grain Products Co., Milwaukee, Wis.	Kutztown, J. A. Schwoyer,	70
492	Western Grain Products Co., Milwaukee, Wis.	Williamsport, Jacob Thomas,	9
484	Acme Food Co., Chicago, Ill.,	Huntingdon, L. E. Poet,	1
495	Acme Milling Co., Allegheny, Pa.,	Williamsport, F. W. Dawson & Son,	12
510	Barwell, J. W., Waukegan, Ill.,	Troy, H. C. Rolison & Co.,	28
350	Chapin & Co., Buffalo, N. Y.,	Royersford, C. M. Bean,	11
371	Chapin & Co., Buffalo, N. Y.,	Douglassville, F. M. Brown,	32
479	Chapin & Co., Buffalo, N. Y.,	Perkiomenville, J. H. Nice,	140
400	Chapin & Co., Buffalo, N. Y.,	Robesonia, Frank S. Ohl,	63
384	Chapin & Co., Buffalo, N. Y.,	Fleetwood, Schlegel, Adam & Co.,	45

FEEDING STUFFS COLLECTED IN 1906—Continued.

Name of Feeding Stuff.	Moisture.	Protein.		Fat.		Crude fiber found.	Price per ton.	Chemist's number.
		Found.	Guaranteed.	Found.	Guaranteed.			
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.		
Bran, coarse,	11.20	14.19	15.00	5.33	4.00	10.89	$20 00	509
Bran,	9.31	14.69	....	3.65	....	6.73	22 00	344
Bran,	10.47	15.25	9.00	4.20	3.00	6.82	25 00	552
Bran,	10.07	14.94	....	4.63	....	9.42	25 00	525
Average,	10.11	14.85	....	4.79	....	9.84	22 44	......
Average digestible,	....	11.58	....	3.25	....	2.85	....	......
Wheat Bran with Admixture.								
Mixed feed, Jersey,	9.67	12.69	12.05	3.75	3.20	12.27	25 00	561
OAT BY-PRODUCTS.								
Oat feed, Vim,	6.15	5.50	7.50	1.98	2.75	....	13 00	471
Oat feed, Vim,	6.02	5.37	7.50	2.50	2.75	25.94	12 00	448
Oat feed, Friends',	6.06	7.00	8.00	2.87	3.00	23.85	13 00	342
Oat feed, Friends',	6.45	5.62	8.00	2.45	3.00	....	13 00	482
Oat feed, Friends',	6.02	6.00	8.00	2.05	3.00	....	13.50	408
Oat feed, Royal,	6.45	6.81	7.60	2.53	2.80	24.37	13 00	369
Oat feed, Royal,	6.60	5.19	7.50	2.03	2.80	25.39	12 00	397
Oat feed, Royal,	7.72	6.00	7.80	2.00	2.80	25.77	13 00	459
Oat feed, Royal,	6.90	5.87	7.80	2.43	2.30	26.31	13 00	401
Oat feed,	6.47	5.44	....	2.45	....	25.22	13 00	453
Average,	6.48	5.88	....	2.33	....	25.26	12 80	......
MIXED FEEDS.								
Proprietary Dairy and Stock Feeds.								
Dairy feed, Quaker,	6.32	13.13	14.00	2.65	3.50	18.14	20 00	450
Digestible,*	....	10.24	....	2.27	....	7.43	....	......
Dairy feed, Sucrene,	13.86	15.30	16.50	4.22	3.50	8.51	23 00	394
Dairy feed, Sucrene,	11.68	15.87	16.50	4.76	3.50	9.03	23 00	341
Dairy feed, Sucrene,	13.10	14.04	16.50	3.11	3.50	....	23 50	406
Dairy feed, Sucrene,	12.89	15.08	16.50	4.00	3.50	....	23 00	452
Dairy feed, Sucrene,	12.32	15.46	16.50	3.59	3.50	9.32	23 00	403
Dairy feed, Sucrene,	8.97	14.94	16.50	3.30	3.50	10.32	25 00	381
Dairy feed, Sucrene,	11.53	16.23	16.50	3.75	3.50	....	24 00	539
Average,	12.05	15.27	....	3.82	....	9.29	23 50	......
Dairy feed,	8.42	14.88	18.00	4.28	4.00	10.87	26 00	380
Dairy feed, Creamo,	6.67	12.44	15.50	4.00	5.10	21.52	24 00	390
Dairy feed, Creamo,	7.45	15.13	15.50	4.18	5.10	16.46	27 16	352
Average,	7.06	13.79	....	4.09	....	18.99	25 58	......
Dairy feed, H-O Co.'s,	7.22	17.94	18.00	4.80	4.50	12.59	28 00	463
Digestible,	....	13.99	....	4.12	....	5.16	....	......
Dairy feed, Prize,	15.71	16.63	17.00	2.76	3.00	....	23 00	535
Dairy feed, Protena,	7.02	16.38	20.00	4.18	3.50	21.47	26 00	396
Dairy food,†	7.42	23.44	....	‡8.29	....	19.07	170 00	S 2
Dairy feed, Hammond,	11.98	17.98	17.00	5.84	3.00	....	23 00	411
Dairy feed, Hammond,	13.50	15.29	17.00	5.00	3.50	10.17	22 00	393
Dairy feed, Hammond,	11.34	15.27	17.00	5.19	3.50	10.27	23 00	383
Dairy feed, Hammond,	13.68	12.77	17.00	4.00	3.50	....	23 00	409
Dairy feed, Hammond,	13.57	14.72	17.00	4.79	3.50	....	24 00	492
Average,	12.81	15.21	....	4.96	....	10.22	23 00	......
Stock food, Acme,§	9.67	11.81	....	6.62	....	6.53	220 00	484
Acme feed,	10.93	8.20	8.50	4.16	4.50	7.28	24 00	495
Calf meal, Blatchford's,||	10.45	27.81	25.00	4.73	5.00	....	70 00	510
Sugar feed, Green Diamond,	8.02	12.50	16.50	2.88	3.50	11.77	30 00	350
Sugar feed, Green Diamond,	8.06	11.75	16.50	2.93	3.50	....	30 00	371
Sugar feed, Green Diamond,	14.70	16.10	16.50	2.09	3.50	....	20 00	479
Sugar feed, Green Diamond,	9.77	10.81	16.50	3.15	3.50	11.51	22 00	400
Sugar feed, Green Diamond,	10.23	15.68	16.50	2.78	3.50	10.81	25 00	384
Average,	10.15	13.37	....	2.77	....	11.36	25 40	......

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*Coefficients assumed same as for H-O Dairy Feed.
†Condimental. Ash, 12.70 per cent.
‡Including sulphur.
§Condimental.
||Condimental.

TABLE X. ANALYSES OF SAMPLES OF

Chemist's number.	Name and Address of Manufacturer or Jobber.	Sampled at	Agent's number.
565	Detweiler, W. C., Allentown, Pa.,	Ronk, Isaac F. Zook,	145
566	Detweiler, W. C., Allentown, Pa.,	Ronk, Isaac F. Zook,	146
346	Mueller, E. P., Milwaukee, Wis.,	Collegeville, W. H. Gristock's Sons,	7
395	American Milling Co., Chicago, Ill.,	West Point, W. K. Hubner,	56
407	American Milling Co., Chicago, Ill.,	West Leesport, S. H. Lenhart & Sons,	68
458	American Milling Co., Chicago, Ill.,	Willow Grove, J. Dyre Moyer,	113
467	American Milling Co., Chicago, Ill.,	Macungie, J. Singmaster & Co.,	128
360	Buffalo Cereal Co., Buffalo, N. Y.,	Norristown, Simpson Bros.,	21
379	Buffalo Horse and Dairy Feed Co., Buffalo, N. Y.	Reading, Strunk & Moyer,	40
345	Corno Mills, East St. Louis, Ill.,	Collegeville, W. H. Gristock's Sons,	6
499	H-O Co., The, Buffalo, N. Y.,	Williamsport, Acme Coal Co.,	17
374	H-O Co., The, Buffalo, N. Y.,	Reading, Koch, Bush & Co.,	35
462	H-O Co., The, Buffalo, N. Y.,	Langhorne, Henry Palmer,	123
513	Husted Mill. and Elev. Co., **Buffalo**, N. Y.	Troy, H. M. Spalding & Son,	31
433	American Cereal Co., Chicago, **Ill.**,	So. Bethlehem, Benner & Person,	94
399	Buffalo Mills Co., Batavia, N. **Y.**,	Sinking Spring, W. F. Krick,	60
461	H-O Co., The, Buffalo, N. Y.,	Langhorne, Henry Palmer,	122
437	H-O Co., The, Buffalo, N. Y.,	Allentown, A. T. Stover Est.,	98
363	Cassel, F. P., Lansdale, Pa.,	Royersford, E. P. Kern,	24
431	Walters', Jacob, Sons, Easton, Pa.,	Easton, Jacob Walters' Sons,	92
416	Yeakle, Samuel, Fort Washington, Pa.,	Fort Washington, Samuel Yeakle,	77
497	Eaker & Viliman, Muncy, Pa.,	Williamsport, M. E. Donnell & Co.,	14
564	Altoona Feed Mills, Altoona, Pa.,	Altoona, Altoona Feed Mills,	82
551	Spanogle & Yeager Mill. Co., Lewistown, Pa.	Altoona, Spanogle & Yeager Mill. Co.,	69
545	Biddle, T. M., Altoona, Pa.,	Altoona, T. M. Biddle,	63
489	City Mills, The, Muncy, Pa.,	Williamsport, Jacob Thomas,	6
487	Ring Milling Co., The, Muncy, Pa.,	Williamsport, Gohl & King,	4
550	Spanogle & Yeager, Lewistown, Pa.,	Altoona, Spanogle & Yeager,	68
558	Klepser Bros., Martinsburg, Pa.,	Altoona, Klepser Bros.,	76
563	Altoona Feed Mills, Altoona, Pa.,	Altoona, Altoona Feed Mills,	81
555	Bare Milling Co., Roaring Springs, Pa.,	Altoona, James Morgan,	73
556	Hagey Bros., Martinsburg, Pa.,	Altoona, James Morgan,	74
557	Klepser Bros., Martinsburg, Pa.,	Altoona, Klepser Bros.,	75
521	Dayton Milling Co., Towanda, Pa.,	Towanda, W. F. Dittrick,	39
440	Landenslager, M. M., Emaus, Pa.,	Allentown, G. B. Shelly, Est.,	101
466	Landenslager, M. M., Emaus, Pa.,	Emaus, R. Stetler,	127
475	Scholl, H. N., Greenlane, Pa.,	Greenlane, H. N. Scholl,	136
518	Hagerman, T. H., Towanda, Pa.,	Towanda, A. C. Blackwell,	36
438	Hawk, J. H., Allentown, Pa.,	Allentown, A. T. Stover Est.,	99
434	Landenslager, M. M., Emaus, Pa.,	So. Allentown, R. A. Wagner,	95
474	Reiter, D. & O. D., Red Hill, Pa.,	Red Hill, D. and O. D. Reiter,	474
429	Jacoby, W. I., Finesville, N. J.,	Easton, Jacob Walters' Sons,	90
430	Teel, A. E., Martins Creek, Pa.,	Easton, Jacob Walters' Sons,	91
348	American Cereal Co., Chicago, Ill.,	Collegeville, F. J. Clamer,	9
386	American Cereal Co., Chicago, Ill.,	Lyons, Hoch Bros.,	47
389	American Cereal Co., Chicago, Ill.,	Lower Providence, N. B. Keyser,	50
347	American Cereal Co., Chicago, Ill.,	Collegeville, F. J. Clamer,	8
464	American Cereal Co., Chicago, Ill.,	Bristol, W. F. Leedom,	125
522	American Cereal Co., Chicago, Ill.,	Towanda, M. J. Long,	49

FEEDING STUFFS COLLECTED IN 1906—Continued.

Name of Feeding Stuff.	Moisture.	Protein.		Fat.		Crude fiber found.	Price per ton.	Chemist's number.
		Found.	Guaranteed.	Found.	Guaranteed.			
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.		
Horse and Cattle Powder, Detweiler's,[*]	8.15	10.13	....	[†]21.81	....	5.62	$170 00	565
Flaxseed feed,[‡]	7.88	21.31	....	32.29	....	6.43	130 00	566
Molasses grains, Mueller's,[§]	19.25	14.33	....	1.52	....	8.42	21 00	346
Proprietary Horse Feeds.								
Horse feed, Sucrene,	11.65	11.66	13.50	3.28	3.50	7.91	23 00	395
Horse feed, Sucrene,	9.70	12.31	13.50	4.05	3.50	....	23 00	407
Horse feed, Sucrene,	15.16	12.14	13.50	2.50	3.50	....	24 00	458
Horse feed, Sucrene,	15.32	12.46	10-12	2.89	2-3	....	24 00	467
Average,	12.96	12.14	....	3.18	....	....	23 50	......
Horse feed,	8.98	11.75	12.00	5.05	4.50	11.57	25 00	360
Horse feed,	8.15	7.75	12.00	3.89	4.00	13.49	26 00	379
Horse feed, Corno,	8.82	8.81	10.50	3.38	5.80	15.81	27 00	345
Horse feed, H-O Co.'s,	8.75	12.50	12.00	4.88	4.50	....	26 00	499
Horse feed, H-O Co.'s,	7.75	13.81	12.00	5.16	4.50	10.50	27 00	374
Horse feed, H-O Co.'s,	8.05	13.19	12.00	4.85	4.50	10.92	28 00	462
Average,	8.18	13.17	....	4.96	....	10.71	27 00	......
Average digestible,	....	9 74	....	4.16	....	3.74	....	......
Horse feed, Husted's,	9.85	10.13	12-13	3.93	4-5	12.14	25 00	513
Proprietary Poultry Foods.								
Poultry food, American	7.80	12.88	14.00	6.55	4.50	5.45	31 30	433
Poultry feed, B. H. D. Co.'s,	7.92	19.75	17.00	5.15	5.50	7.34	24 00	399
Poultry feed, H-O Co.'s,	8.90	17.50	17.00	4.95	5.50	6.29	37 00	461
Poultry feed, H-O Co.'s,	7.77	17.50	17.00	5.88	5.50	5.82	38 00	437
Average,	8.34	17.50	....	5.42	....	6.05	37 50	......
Chick Manna,	9.06	12.50	12-14	4.59	4-5	2.17	[‡‡]0 08	463
Poultry mixture,	8.62	12.31	....	5.13	....	5.59	35 00	431
Poultry mixture,	7.75	16.69	....	3.77	....	8.42	30.00	416
Miscellaneous Chop Feeds								
Corn and oats chop,	10.80	7.94	7.63	3.99	3.56	7.23	24 00	497
Corn and oats chop, Dairy,	8.62	8.13	7.00	4.33	3.00	10.62	25 00	564
Corn and oats chop, Dairy,	10.55	9.00	7-11	4.00	2-4	3.07	25 00	551
Rye and oats chop,	11.55	12.06	9.50	3.38	1.40	4.04	25 00	545
Rye and oats chop,	11.02	11.63	....	2.70	....	5.29	27 00	489
Rye and oats chop,	11.05	12.31	....	2.63	....	4.24	28 00	487
Rye and oats chop, Dexter,	9.92	11.19	7-11	4.43	3-7	4.19	25 00	550
Cow chop,	10.10	9.44	7.00	3.75	3.00	3.09	25 00	558
Horse chop,	8.50	9.44	7.00	5.40	3.00	11.49	26 00	563
Horse chop,	8.93	12.25	10.00	2.66	5.00	5.02	26 00	555
Horse chop,	9.85	12.94	8.00	4.13	4.00	4.19	26 00	556
Horse chop,	10.00	11.38	7.00	3.43	3.00	4.41	25 00	557
Mixed chop,	9.42	7.00	8.68	3.02	3.72	11.27	26 00	521
Mixed chop,	8.82	8.94	....	3.70	....	5.77	25 00	440
Mixed chop,	13.22	9.38	....	[‖]0.75	....	7.07	25 00	466
Mixed chop,	11.12	10.13	....	1.20	....	3.62	23 00	475
Mixed feed,	10.47	9.00	8.81	3.88	3.91	6.97	26 00	518
Mixed feed,	8.07	10.25	....	6.65	....	5.22	25 00	438
Mixed feed, corn, oats and rye,	8.57	10.00	....	3.80	....	3.84	31 00	434
Corn, oats, rye and middlings,	10.87	13.56	....	[‖]2.10	....	7.10	24 00	474
Cob, corn and rye mixture,	9.27	8.75	....	3.05	....	6.10	24 00	429
Pure grain mixture,	10.15	10.44	....	2.68	....	4.34	27 00	430
Average,[**]	9.83	10.11	....	3.64	....	5.70	25 70	......
Corn and Oat Feeds.								
Corn and oat feed, Quaker Dairy,	7.09	12.69	11.5-14	4.00	3-4	16.16	21 00	348
Corn and oat feed, Quaker Dairy,	6.05	12.31	11.5-14	3.79	3-4	17.14	20 00	386
Corn and oat feed, Quaker Dairy,	6.64	13.31	11.5-14	4.03	3-4	16.49	20 00	389
Average,	6.59	12.77	....	3.94	....	16.59	20.33	......
Corn and oat feed, Victor,	8.14	8.31	7.5-9	4.65	3-4	12.33	22 00	247
Corn and oat feed, Victor,	14.29	7.90	7.5-9	[‖]1.75	3-4	12.76	20 00	464
Corn and oat feed, Victor,	8.45	7.69	7.5-9	4.08	3-4	12.59	25 00	522
Average,[††]	8.29	8.00	....	4.37	....	12.46	23 50	......
Average digestible,	....	5.68	....	3.80	....	5.98	....	......

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[*] Condimental. Ash, 35.11 per cent.

[†] Including sulphur.

[‡] Condimental. Ash, 7.96 per cent.

[§] Improperly guaranteed: Protein and fat, 22.54 per cent.; carbohydrates, 48.58 per cent.

[‖] Sample musty. Portion of fat destroyed.

[**] Excluding Nos. 466 and 474.

[††] Excluding No. 464.

[‡‡] Per pound.

TABLE X. ANALYSES OF SAMPLES OF

Chemist's number.	Name and Address of Manufacturer or Jobber.	Sampled at	Agent's number.
494	American Cereal Co., Chicago, Ill.,	Williamsport, F. W. Dawson & Son,	11
375	American Cereal Co., Chicago, Ill.,	Reading, Koch, Bush & Co.,	36
553	American Cereal Co., Chicago, Ill.,	Altoona, H. H. Langdon,	71
524	American Cereal Co., Chicago, Ill.,	Towanda, M. J. Long,	42
501	American Cereal Co., Chicago, Ill.,	Canton, Preston Bros.,	19
368	American Cereal Co., Chicago, Ill.,	Pottstown, M. B. Tyson,	29
449	Buffalo Horse and Dairy Feed Co., Batavia, N. Y.	Sellersville, J. S. Lewis,	110
423	Dayton Milling Co., Towanda, Pa.,	Doylestown, H. S. Beidler,	84
421	Swartley, M. R., Philadelphia, Pa.,	Doylestown, H. S. Beidler,	82
422	Swartley, M. R., Philadelphia, Pa.,	Doylestown, H. S. Beidler,	83
478	Kline, Milton, Pennsburg, Pa.,	Perkiomenville, E. S. Brey,	139
435	Krause, C. A., Milwaukee, Wis.,	Allentown, East Penn. Mill. Co.,	96
444	Snyder, G. S., Hatfield, Pa.,	Hatfield, G. S. Snyder,	105
457	Bosler, Joseph, & Co., Ogontz, Pa.,	Jenkintown, Andrew Graham,	118
412	Rock Co. Sugar Co., Janesville, Wis.,	Lansdale, A. C. Godshall.	73
446	Rock Co. Sugar Co., Janesville, Wis.,	Hatfield, G. S. Snyder,	107
376	American Cereal Co., Chicago, Ill.,	Reading, H. G. Landes' Sons,	37
415	Baugh & Sons Co., Philadelphia, Pa.,	Ambler, J. W. Craft,	76
378	Spratts Patent, Ltd., Newark, N. J.,	Reading, H. G. Landes' Sons,	39
377	Spratts Patent, Ltd., Newark, N. J.,	Reading, H. G. Landes' Sons,	38
365	Taylor Bros., Camden, N. J.,	Pottstown, S. B. Wagner & Co.,	26

FEEDING STUFFS COLLECTED IN 1906—Concluded.

Name of Feeding Stuff.	Moisture.	Protein.		Fat.		Crude fiber found.	Price per ton.	Chemist's number.
		Found.	Guaranteed.	Found.	Guaranteed.			
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.		
Corn, Oats and Barley Feed.								
Schumacher's stock feed,	9.75	10.00	11-13	4.08	4-5	10.74	$24 00	494
Schumacher's stock feed,	6.90	10.25	10-13	4.81	4-5	....	27 00	375
Suchmacher's stock feed,	8.57	10.13	11-13	4.23	4-5	....	25 00	553
Schumacher's stock feed,	8.45	10.94	11-13	3.93	4-5	10.97	26 00	524
Schumacher's stock feed,	7.97	10.44	11-13	4.15	4-5	....	24 00	501
Schumacher's stock feed,	8.53	12.44	11-13	5.18	4-5	10.52	27 00	368
Average,	8.36	10.70	....	4.39	....	10.74	25 50	......
Corn, oats and barley feed,	7.37	8.81	9.00	3.17	4.00	14.09	24 00	449
Miscellaneous Feeds.								
Bran, buckwheat,	7.70	14.81	....	3.29	....	28.57	18 00	423
Middlings, buckwheat,	16.06	17.85	....	4.36	....	5.30	20 00	421
Middlings, buckwheat,	8.87	12.06	....	2.95	....	2.04	24 00	422
Average,	12.47	14.96	....	3.66	....	3.67	22 00	......
Middlings, rye,	9.70	15.75	....	3.20	....	4.17	24 00	478
Middlings, rye,	9.37	15.75	....	3.83	....	6.84	20 50	435
Middlings, rye,	9.07	12.75	....	3.15	....	2.77	20 00	444
Average,	9.38	14.75	....	3.39	....	4.59	21 50	......
Oats, crushed,	8.32	11.56	....	4.60	....	10.84	33 00	457
Beet pulp, dried,	7.43	10.69	8.50	0.70	0.59	12.91	20 00	412
Beet pulp, dried,	5.45	12.00	8.50	0.88	0.59	13.67	19 50	446
Average,	6.44	11.34	....	0.79	....	13.29	19 75	......
Screenings,	8.10	12.25	....	3.35	....	....	....	376
ANIMAL BY-PRODUCTS.								
Meat meal, Baugh's coarse,	....	50.58	57-60	14.60	16-17	....	50 00	415
Meat, ground,	....	51.35	55.00	16.36	16.00	....	60 00	378
Crissel,	....	52.38	62.00	18.66	17.50	....	70 00	377
Chicken feed,	5.07	36.63	45.00	12.62	15.00	....	60 00	365